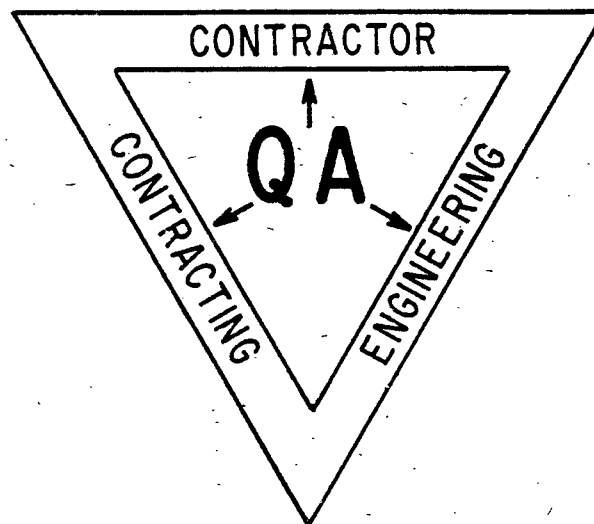




COMPTROLLER MANUAL

VOL X



QUALITY ASSURANCE

COMDTINST M4855.1



DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

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COMDTINST M4855.1
7 DEC 1981

COMMANDANT INSTRUCTION M4855.1

Subj: Comptroller Manual, Volume X, Quality Assurance

1. PURPOSE. This Manual provides the policy and procedures concerning Coast Guard Quality Assurance in the following four parts:

PART I - QUALITY ASSURANCE PROGRAM
PART II - SPECIFICATION DEVELOPMENT
PART III - QUALITY ASSURANCE REPRESENTATIVE
PART IV - PRODUCT QUALITY DEFICIENCY REPORTING SYSTEM

2. DIRECTIVES AFFECTED.

PART I - Cancels COMDTINST ~~5210.8~~.

PART II - Cancels COMDTINST M4121.1 (old CG-496).

PART III - No directives are affected as this is the original publication of this Part.

PART IV - Cancels COMDTINST ~~5210.9~~.

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3. APPLICABILITY.

PART I - QUALITY ASSURANCE PROGRAM. Part I applies to all Coast Guard Organizational levels having planning, programming, budgeting or procurement responsibilities.

PART II - SPECIFICATION DEVELOPMENT. Part II applies to all Coast Guard Organizational levels having planning, programming, budgeting or procurement responsibilities.

PART III - QUALITY ASSURANCE REPRESENTATIVE. The utilization of a Quality Assurance Representative (QAR), and thus the policy and procedures of Part III, is applicable to certain supply contracts. Part III does not apply to construction contracts which are addressed in COMDTINST M11000.1 series. Additionally, it does not apply to research and development contracts, ship repair contracts or to Resident Inspection Offices with an OPFAC number (generally major ship or aircraft procurements). However, RIOs may find this Part useful as a reference when the Contracting Officer's Technical Representatives (COTR) are performing quality assurance inspections.

PART IV - PRODUCT QUALITY DEFICIENCY REPORTING SYSTEM. Part IV applies to acquisitions where the Coast Guard is the designated source of supply (refer to COMDTINST M4400.13 for reporting deficiencies of material acquired from other sources). Product quality deficiency reports are required for deficiencies discovered within the first year of newly acquired products. Part IV does not apply to aeronautical equipment (refer to COMDTINST M13020.1 for reporting deficiencies of aeronautical equipment).

4. ACTION. All Coast Guard Organizational levels having planning, programming, budgeting or procurement responsibilities shall ensure compliance with this Manual.

5. CHANGES. Changes to this Manual will be consecutively numbered and will include reprinted pages, when necessary. Comments and recommendations pertaining to this Manual shall be addressed to Commandant (G-FQA).

6. REPORTS. Only Part IV has reporting requirements. Commanding officers of field units, district commanders, commanding officers of Headquarters units, and Commander, Activities Europe shall submit Product Quality Deficiency Reports (PQDR) to Commandant (G-FQA) via their chain of command for quality deficiencies discovered within one year of their acquisition of the product. Standard Form 368 shall be used for this purpose.

7 DEC 1981

7. FORMS. Supplies of Standard Form 368, Quality Deficiency Report, may be requisitioned from the E/GICP (Routing Identifier Code ZNC) using stock number 7540-00-133-5541.



W. P. KOZLOVSKY
Comptroller





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WHOM ENTERED



COMPTROLLER MANUAL
VOLUME X (QUALITY ASSURANCE)
PART I
QUALITY ASSURANCE PROGRAM

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FORWARD

Subj: Comptroller Manual, Volume X, Part I, Quality Assurance Program

1. PURPOSE. Part I establishes a Coast Guard Quality Assurance Program.
2. APPLICABILITY. Part I applies to all Coast Guard Organizational levels having planning, programming, budgeting or procurement responsibilities.
3. DIRECTIVES AFFECTED. Part I cancels COMDTINST 5210.8.
4. ACTION. All Coast Guard Organizational levels having planning, programming, budgeting or procurement responsibilities shall ensure compliance with the provisions of Part I.

- A. Introduction. With the increasing complexity of systems procurements and their associated high costs, a need for an effective Quality Assurance (QA) program within the Coast Guard is well established. Despite the increased need, however, reliance can no longer be placed on 100 percent Coast Guard inspection since this approach is prohibitive both in terms of cost and use of skilled personnel.
- B. General. Given that an effective Quality Assurance program must ensure that contract deliverables fully conform to specifications, mutual responsibilities exist between the government and the contractor. In the first instance, the government must ensure that specifications are clear and compatible with measuring the required level of quality. On the other hand, if 100 percent inspection is to be avoided, the contractor has a responsibility for establishing a Quality Assurance program, including testing and inspection, to ensure that the end product meets the specifications. If both parties were to fully meet their responsibilities, inspection could theoretically be limited to an audit of the contractor's quality program. Realistically, however, a shortfall in meeting responsibilities by either or both parties occasionally occurs. It is therefore necessary to formalize the Coast Guard's Quality Assurance objectives, policies, and responsibilities.
- C. Definitions.
1. Quality. Quality is conformance: conformance to the composite of material attributes and performance features and characteristics specified in the contract specification requirements which will satisfy a given need.
 2. Quality Assurance. Quality assurance is all those planned or systematic actions necessary to provide adequate confidence that products or services will satisfy given needs. To ensure this goal, quality shall be an integral part of the definition of those needs. This shall consist of ensuring that adequate requirements are specified, conformance to the specified requirements is verified, and satisfactory performance is achieved. In Coast Guard procurement, this means that quality assurance must be "built into" the contract specification requirements, not assumed to consist of only verification or inspection once the products or services are produced.
 3. Quality Control. Quality control is a contractor's management function whereby control of quality of raw or produced material is exercised for the purpose of preventing production of defective material.

- C-4. Quality Audit. A systematic examination of the acts and decisions with respect to quality in order to independently verify or evaluate the operational requirements of the quality assurance program or the specification or contract requirements of the product or service.
5. Products. All items, materiel, material, data, software, supplies, systems, assemblies, subassemblies, or portions thereof which are produced, purchased, developed or otherwise used by the Coast Guard.
- D. Objectives. The objectives of the Coast Guard Quality Assurance Program are to ensure that:
1. Only essential quality and technical requirements are specified.
 2. Specification development is compatible with measuring quality requirements.
 3. All services and products designed, developed, purchased, or produced by or for the Coast Guard conform to contract specifications.
 4. That only necessary and cost beneficial Quality Assurance provisions are associated with each Coast Guard procurement.
- E. Policies. To achieve the objectives of the Quality Assurance Program, the following policies shall be adhered to:
1. Each planned procurement shall be analyzed to determine the degree of quality assurance required.
 2. Contractors shall be held responsible for the quality of products and services furnished by their suppliers and Government inspection at supplier facilities kept to a minimum.
 3. Commandant (G-FQA) shall ensure audit of selected District and Headquarters unit contracts with quality assurance provisions to verify that the required procedures have been carried out.
- F. Quality Assurance Functions. The functions of the Quality Assurance program shall include the following areas:
1. Specifications shall be reviewed for ambiguities, clarity and producibility. The quality assurance portions of the specification shall be reviewed to ensure consistency and compatibility with the technical/operational requirements as specified.

- F-2. The contractor's capabilities shall be reviewed in the areas of management, finance, personnel, manufacturing, quality assurance, and subcontractor control.
3. Verification of the contractor's quality assurance system shall include incoming inspection, in-process inspection, final product tests, technical documentation and data, and preservation, packing and packaging of completed items.
4. Field data shall be coordinated with the cognizant Support Manager in order to determine problem areas and implement remedial measures in current and future procurement specifications.
5. It is important to note that all QA functions are not necessarily required on every procurement, but rather must be considered, and when determined necessary, assigned as a responsibility of either the contractor or a Coast Guard element.
- G. Responsibilities. Various levels within the Coast Guard procurement shall have the following responsibilities:
1. The Comptroller shall provide overall policy direction on the Coast Guard Quality Assurance Program and develop and publish procedures to:
 - a. Furnish basic standards for the preparation of specifications.
 - b. Describe specific specification and contractual quality requirements to meet the needs of each procurement by contract type.
 - c. Provide guidance for the evaluation of a contractor's inspection and quality program as a part of pre-award surveys.
 - d. Describe the duties and authority of contract inspectors.
 - e. Audit compliance.
 - f. Review feedback reports for required action.
 2. Program Managers at the Headquarters level shall plan, program and budget for the quality assurance resources necessary to carry out specific projects identified by RCP's.
 3. Support Managers at the Headquarters level shall advise Program Managers of the resources necessary to carry out the quality assurance program for specific projects.

G-4. Contracting Officers shall review procurement documents to ensure that the required quality assurance has been incorporated into the contract.

H. Contract Inspection. The purpose of inspection by the Coast Guard is to assure that the products and services procured conform to the quality and quantity requirements of the contract. Inspection is the key to the Coast Guard's ability to enforce the quality provisions of a contract.

1. Program managers shall provide for the resources which will be assigned as resident inspectors, members of APO/RIO staffs or in the Quality Assurance Division. The exact location will depend on the complexity and scope of the project.
2. Contracting Officer's Representatives, as in the past, shall continue to ensure that the provisions of assigned contracts are carried out.
3. Contracting Officers may utilize, but are not limited to, the following if quality assurance inspections are deemed necessary to determine compliance with the contract specification requirements.
 - a. Quality Assurance Representative (QAR) or Contracting Officer's Technical Representative (COTR). Optimum inspection performance may be obtained by using someone other than the specification originator since a third party performing inspection services does not become emotionally involved and is capable of performing more objectively.
 - b. Representatives of other agencies (DCAS, FAA, etc.); however, the use of representatives of other agencies has the drawback that these agencies are not familiar with Coast Guard operations and methods and may not be aware of problem areas at an early stage.

COMPTROLLER MANUAL
VOLUME X (QUALITY ASSURANCE)
PART II
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FORWARD

Subj: Comptroller Manual, Volume X, Part II, Specification Development

1. Purpose. Part II provides assistance and direction for the preparation of specifications and statements of work for Coast Guard procurements.

2. Applicability. Part II applies to all Coast Guard Organizational levels having planning, programming, budgeting or procurement responsibilities.

3. Directives Affected. Part II cancels COMDTINST M4121.1 (old CG-496).

4. Action. All Coast Guard Organizational levels having planning, programming, budgeting or procurement responsibilities shall ensure compliance with the provisions of Part II.

CHAPTER 1. INTRODUCTION

- A. General. A specification which is properly developed will better insure a successful procurement. A procurement is successful when a contractor profits from the timely delivery of quality products or services which meet the needs of the Coast Guard. The significance of these essential elements - profit, needs met, delivery - cannot be overemphasized. Experience has shown the degree to which a procurement is successful is directly proportional to the correctness of both the procurement specification and the bid of a prospective contractor; never one without the other. A correct specification will accurately describe the needs of the Coast Guard without containing contractual, technical, grammatical and organizational errors. To better enable the prospective contractor to prepare a correct bid within the normally short time between a procurement's advertisement and award, all the requirements of the product specified must be readily identifiable. Therefore, the organization of the procurement specification must be consistent with other specifications used not only by the Coast Guard but other Government agencies.
- B. Specifications. Specifications are divided into three major categories or types: Performance (equipment and services), Design, Purchase Description (Brand name or Equal). The following chapters will present, in detail, recommended formats to be followed when preparing specifications and, additionally, statements of work. Each type of specification has an outline and an explanation/suggested format for each requirement. Each specification and statement of work is unique. Therefore, the writer should adjust the outlines to meet his requirements, not the other way around.
- C. Specification Format. All specifications and statements of work shall be organized, titled and numbered in the following 6 section format.
1. SCOPE
 2. APPLICABLE DOCUMENTS
 3. REQUIREMENTS
 4. QUALITY ASSURANCE PROVISIONS
 5. PREPARATION FOR DELIVERY
 6. NOTES (this section is optional)



CHAPTER 2. SPECIFICATIONS: TYPES AND APPLICATIONS

- A. Introduction. A major function of support personnel involves the procurement of end items from civilian industry. These personnel must become familiar with the problem areas encountered by the Contracting Officer. Contracting Officers do an excellent job in obtaining the equipment desired; however, it should be recognized that the responsibilities applicable to the Contracting Officer are not necessarily identical to those of support personnel. This chapter is meant to familiarize support personnel with a few contracting problems in the hope that better understanding will result in better equipment for the person in the field. It should be understood that this chapter cannot make an expert out of the reader. This chapter is simplified and the reader is invited to study the many articles, books and court decisions concerning the subject.
- B. General. The specification is the basic foundation for equipment being procured and is not an area for shortcuts. A properly written specification can save time and dollars in providing support equipment to the field. The purchase specification is a form of communication between the Coast Guard and civilian contractors. It becomes an important contract document and is subject to legal interpretation. It must be written for and understood by personnel who do not necessarily have the same background as the writer. In fact, it must be assumed that the recipient does not have the same background and same value judgements as the writer. The primary objective of the contractor is to stay in business, not to support the Coast Guard. Nearly all contractors can produce satisfactory equipment, but it must be understood that when the chips are down, the contractor's loyalty is to his company.
- C. Types of Specifications. There are three basic types of specifications: the Performance Specification, the Design Specification and the Purchase Description. The differences must be understood by all engineers involved in the procurement process.
 1. Performance Specification. A performance specification contains only the detailed performance requirements for the end item. Items not to be included are specific configuration, detailed design, or exact methods of obtaining the desired performance unless directly applicable to the end use. This type of specification indicates what the equipment will do, not how it will do it. Performance specifications are primarily for development of new types of equipment and tend to result in state-of-the-art advances. In a strict performance specification, the contractor accepts the risk that this design, engineering and workmanship will, in an end item, meet the performance requirements. Verification of the contractor's efforts should be performed by field testing of the end product under conditions of service use and by laboratory tests where applicable.

- 2-C-2. Design Specifications. A design specification contains measurements, tolerances, materials, tests, and inspection requirements. The information is sufficiently detailed to ensure that the manufactured items are exactly the same as previously manufactured items. No departure in design can be incorporated. Detailed manufacturing drawings are often supplied to the contractor by the government. This type of specification is used when a satisfactory equipment is available and standardization and/or interchangeability is important. No state-of-the-art advances can be expected. When a design specification is used, the government accepts the responsibility for performance of the end item. In addition, the government accepts the responsibility for omissions, errors, and deficiencies in the specification and its associated drawings. Verification of the manufacturer's efforts consists primarily of comparing the finished product with the drawings/specifications supplied. All performance requirements must be consistent with the standard design criteria provided. In case of conflict, the design requirement prevails.
3. Purchase Description. A purchase description normally identifies a product by "brand name or equal." It should contain performance requirements (salient features), that are of particular significance to the Coast Guard. Needless to say, the brand name indicated must meet the performance requirements. In general terms, the Coast Guard has the responsibility for performance if the brand name is supplied, but the contractor has the responsibility if an "or equal" is supplied. Acceptance or rejection of the product is based upon verification of the "salient features" indicated in the purchase description.
- D. Use of Models and Drawings. Occasionally, the Coast Guard will supply a model with the design specification. If this is done, it must be made very clear in the specification why the model is supplied. There is no natural law that says the model performs as stated in the drawings. Murphy's Law, in fact, states that the reverse is true. When a model is supplied, the question of model testing must be addressed. Verification of the model performance should be included in the contract if it is to be performed. Verification of the drawings against the model also takes time and money and must also be included in the contract if it is to be performed. If manufacturer's drawings are not supplied, reverse engineering by the contractor can be time consuming and difficult; therefore a model is normally furnished with drawings. Clarification of the use of the model by the contractor is of primary importance when the time comes to determine responsibility for end item performance.

2-E. Real World Specification. In practice, all specifications involve a combination of performance and design requirements. The originator must have firmly in mind what his basic intent is and must impart this idea to the contractor via the specification. In cases of dispute during the course of the contract, this question can be important. The overall intent of the specification will be examined as well as the intent of the specific requirement in question. The delivery schedules in the contract are also strongly affected by the basic intent of the specification. Performance requirements generally require longer delivery times than design specifications, and purchase descriptions generally have the shortest delivery schedules.

F. Writing the Specification. As previously noted, the specification is written for the civilian contractor and must be clearly understandable in the simplest terms possible. A few pointers are in order to aid the military specification writer.

1. Blanket Statements. Blanket or "motherhood" statements are of little practical use and may hide useful statements in a dense jungle of verbiage. Terms like "best commercial practice," "good workmanship," and "maximum reliability" are sometimes laziness on the part of the writer. Usually they are the result of specifications being written on an extremely limited time schedule.
2. Strict/Substantial Compliance. A note should be made here regarding satisfactory contractor compliance with the specification. Strict compliance is only applicable when the specification makes a specific statement, i.e., "The equipment shall weigh five pounds +1lb." The contractor is required to meet the requirement and the Coast Guard has the right to reject the equipment if it does not do so. When blanket statements are used, such as "best commercial practice," substantial compliance is considered satisfactory. The contractor has a responsibility to meet "normal standards" (his own); he is not required to meet the high standards usually envisioned by the originator of the specification. This particular area often results in contention between the Coast Guard and the contractor.

- F-3. Impossible Performance. Impossibility of performance frequently comes about due to the mix of design and performance requirements. Often the Coast Guard states a performance requirement and elsewhere in the specification states a design requirement that turns out to preclude meeting the performance requirement. This is a difficult problem to combat, particularly from a desk. As a defense, keep firmly in mind the basic type of specification (performance vs. design) and indicate so in the specification. Requirements that are definitely beyond the state-of-the-art may result in impossibility of performance. When proven, impossibility of performance results in the Coast Guard paying the contractor all costs and receiving useless equipment in return. This case is usually the result of a development contract and should be well covered in the specification. The burden is on the government to prove that performance is possible in questionable cases.
4. Specification Overkill. Don't specify more than is necessary since loss of time and money are the inevitable result. Engineering personnel have by nature an inherent tendency to overengineer a piece of equipment. A common method of overkill involves using Military Specifications/Standards to "make up for anything I missed." Do not reference a MIL SPEC/STD unless you are thoroughly familiar with the requirements contained therein.
5. Ambiguities-Interpretation. First, specifications should be interpreted as a whole; words and sentences cannot be taken out of context to prove a point. All writings of the contract must be interpreted together to arrive at the intent. Inconsistencies between the general and specific provisions of the contract can occur if care is not taken. The specific provisions are meant to qualify the meaning of the general specification. In cases where words have more than one reasonable meaning the normal interpretation is against the drafter, i.e., if two interpretations are possible, the contractor's interpretation (cheapest for fixed price contract) is usually accepted in cases of dispute. A point of interpretation first becomes apparent to the contractor; he does not stop work and run to the Coast Guard for advice. He has initial interpretation, and the equipment may be well down the road based on this interpretation before the Coast Guard is even aware of the problem. The contractor naturally strives to perform economically and usually arrives at an interpretation that is most profitable to him and still meets the contract requirements.

2-G. Defense Against Poor Specifications. The writer must make every effort to write an effective specification. A specification must be looked at from the contractor's viewpoint. To be competitive, the contractor must bid on, and perform, in the most economical manner. If the specification is poor, and contains many ambiguities and holes, a poor end item will be obtained. It must be clear, and concise and contain as few frills as necessary. Keep it simple, it can then be readily viewed and understood. Some specifications appear to be written by someone who is getting paid by the word.

H. Design Review Board. The use of a Design Review Board prior to issuing a specification is invaluable for finding many problem areas. Presently developed Design Review Boards, unfortunately, are extremely time consuming. The proper use and operation of the Board result in the quicker delivery of the final product. Technical contracting expertise and unfamiliarity with the specific project are advantages for Design Review Board personnel.



CHAPTER 3. WRITING PRACTICES

- A. Introduction. This chapter covers style, format and general instructions for preparing a specification. This includes material arrangement, paragraphing, numbering, heading of requirements.
- B. General. Before proceeding with specific samples of paragraphs, it is important to understand that the specification writer must convey his meaning in a clear, concise manner and adhere to the procurement regulations. To accomplish this, the following matter of a general nature is presented.
- C. Language Style. The paramount consideration in a specification is its technical essence, and this should be presented in language free of vague and ambiguous terms and using the simplest words and phrases that will convey the intended meaning. Essential information shall be complete, whether by direct statements or reference to other documents. Consistency in terminology and organization of material will contribute to the specification's clarity and usefulness. Sentences shall be as short and concise as possible. Punctuation should aid in reading and prevent misreading. Well-planned word order requires a minimum of punctuation. When extensive punctuation is necessary for clarity, the sentence(s) shall be rewritten. Sentences with compound clauses shall be converted into short and concise separate sentences.
- D. Capitalization, Spelling, Etc. Except where DOT requirements differ, the United States Government Printing Office Style Manual shall be used as a guide to capitalization, spelling, punctuation, syllabication, etc. Webster's New International Unabridged Dictionary should be consulted when the manual does not provide the guidance needed.
- E. Abbreviations. The applicable standard abbreviations listed in Federal and military standards shall be used, except that abbreviations in titles of specifications employed shall be those in common usage and not subject to misinterpretation. The first time an abbreviation is used in text, it shall be placed in parentheses and shall be preceded by the word or term spelled out in full; e.g., pounds per square inch (PSI). This rule does not apply to abbreviations used or for the first time in tables and equations.
- F. Symbols. The only symbols that shall be used in text are degree (°) and take "+," "_, and "+" to express ranges or tolerances. Other symbols may be used in equations and tables. Graphic symbols, when used in figures, shall be in accordance with military standards. (Any symbol formed by a single character should be avoided if practicable, since an error destroys the intended meaning.)

3-G. Proprietary Names. Trade names, copyrighted names, or other proprietary names applying exclusively to the product of one company shall not be used unless the item(s) cannot be adequately described because of the technical involvements, construction, or composition. In such instances, and if possible, several commercial products may be included, followed by the words "or equal" to assure wider competition and that bidding will not be limited to a particular make. The same applies to the manufacturers' part numbers or drawing numbers for minor parts when it is impracticable to specify the exact requirements in the specification. Insofar as practical, the particular characteristics required shall be included to define "or equal."

H. Commonly Used Words and Phrases. Certain words and phrases are frequently used in a specification. The following rules shall be followed:

1. Referenced documents shall be cited thus:
 - a. "conforming to. . ."
 - b. "as specified in. . ."
 - c. "in accordance with. . ."
2. "Unless otherwise specified" shall be used to indicate an alternative course of action. The phrase shall always come at the beginning of the sentence, and, if possible, at the beginning of the paragraph; however, this phrase shall be used only when it is possible to clarify its meaning by providing a reference, such as to Section 6 of the specification.
3. When making reference to a requirement in the specification and the requirement referenced is rather obvious or not difficult to locate, the simple phrase "as specified herein" is sufficient and should be used.
4. The phrase ". . . to determine compliance with . . ." or ". . . to determine conformance to. . ." should be used in place of ". . . to determine compliance to. . ." In any case, use the same wording throughout.
5. In stating limitations, the phrase shall be stated, "The diameter shall be not greater than . . ." or minimum limit, or "The diameter shall be not less than . . ." for minimum limit.

- 3-H-6. The emphatic form of verbs shall be used throughout the specification; that is, state in the requirements section that "The indicator shall be designed to indicate. . .", and in the section containing test provisions, "The indicator shall be turned to zero and 220 volts alternating current applied." For specific test procedures, the imperative form may be used provided the entire method is preceded by "the following tests shall be performed", or related wording. Thus, "Turn the indicator to zero and apply 220 volts alternating current."
7. Capitalize the words "drawing," "bulletin;" etc., only when they are used immediately preceding the number of a document. However, specifications, standards, and handbooks will be identified in the text only by their document identifier; thus MIL-E-000 (not specification MIL-E-000).
- I. Use of "Shall," "Will," "Should" and "May." Use "shall" whenever a specification expresses a provision that is binding. Use "should" and "may" whenever it is necessary to express nonmandatory provisions. "Will" may be used to express a declaration of purpose on the part of the Government. It may be necessary to use "will" in cases where simple futurity is required, i.e., "Power for the motor will be supplied with the ship."
- J. Use of "and/or." The term "and/or" shall not be used in specifications. In a field such as specifications, where definitive, precise language is imperative, the phrase "and/or" has no place.
- K. Use of "Flammable" and "Nonflammable." The terms "flammable" and "nonflammable" shall be used in specifications in lieu of the terms "inflammable," "unflammable," and "noninflammable."
- L. Use of Decimals. Decimals shall be used instead of fractions in the specification wherever possible.
- M. Paragraph Numbering. Each paragraph and subparagraph shall be numbered consecutively within each section of the specification, using a period to separate the number representing each breakdown. Itemization within a paragraph or subparagraph shall be identified by lower-case letters to avoid confusion with paragraph numerals. For clarity to text, paragraph numbering should be limited to three sublevels, where possible. Example for Section 3 of specification:

Requirements 3
First paragraph 3.1
First subparagraph 3.1.1
Second paragraph 3.2
First subparagraph 3.2.1
Second subparagraph 3.2.2

- 3-N. Paragraph Identification. Each paragraph and subparagraph should be given a subject identification. The first letter of the first word in the paragraph and subparagraph identification shall be capitalized. Paragraph identifications in any one section shall not be duplicated. Paragraph identifications shall be underlined.
- O. Underline. Do not underline any portion of a paragraph or capitalize phrases or words for the sake of emphasis with the exceptions noted in paragraph C. All of the requirements are important in obtaining the desired product or service.
- P. Cross-References. Cross-references, that is references to parts within the specification, shall be held to a minimum. Cross-references shall be used only to clarify the relationship of requirements within the specification and to avoid inconsistencies and unnecessary repetition. When the cross-reference is to a paragraph, subparagraph, etc., within the specification, the cross-reference shall be only to the specific paragraph number. (The word paragraph shall not appear.)
- Q. Figures. A figure is a picture or graph, and constitutes an integral part of the specification. It shall be clearly related to, and consistent with, the text of the associated paragraph. (Figure should not be confused with numbered and dated drawings which shall be listed in Section 3 as references only.) Each figure shall cross-reference the associated paragraph, when not adjacent thereto.
1. Location of Figures in Specifications. Each figure shall be placed following, or within, the paragraph containing a reference to it. If figures are numerous and their location, as indicated above, would interfere with correct sequencing of paragraphs and cause difficulty in understanding or interpretation, they may be placed in numerical sequence at the end of the specification on pages following the concluding material and before any appendix or index.
 2. Preparation of Figures. All figures shall be titled and they shall be numbered consecutively with Arabic numerals in the order in which they are initially referenced in the specification.
 3. Metric Equivalents. Metric equivalents for size shall be included by an appropriate method, for information purposes. Other metric system equivalents such as grams, litres, and degrees Celsius shall also be included in documents for information purposes, if appropriate. (Ref: COMDTINST 5711.1).

3-R. Tables. A table is an arrangement of data in lines and columns. It shall be used when data can thus be presented more clearly than in text. Elaborate or complicated tables shall be avoided. References in the text shall be sufficiently detailed to make the purpose of the table clear, and the table shall be restricted to data pertinent to the associated text. Each table shall cross-reference the associated text, when not adjacent thereto.

1. Location of Tables in Specification. A table shall be placed following, or within, the paragraph containing the first reference to it. If space does not permit, a table shall be placed at the beginning of the succeeding page, or if extensive, on a separate page.

2. Preparation of Tables. The tables shall be numbered consecutively with Roman numerals in the order in which they are initially referenced in the specification. The number and title shall be placed above the table. The contents of a table shall be organized and arranged to show clearly the significance and relationship of the data. Data included in the text shall not be repeated in the table. Tables may be boxed in and ruled. When a table is of such width as to make it impracticable to place it in normal position on the page, it may be rotated counterclockwise 90 degrees.

S. Foldouts. Foldouts shall be avoided except where required for legibility. Large tables or figures may be broken so that they may be printed on facing pages. When foldouts are required, they should be grouped in one place, preferably at the end of the specification (in the same location as figures) and suitable reference to their location shall be included in the text.

T. Footnotes.

1. Footnotes to Text. Footnotes to the text should be avoided. Their purpose is to convey additional information that is not properly a part of the text. A footnote to the text shall be placed at the bottom of the page containing the reference to it. They shall be consecutively numbered throughout the specification with Arabic numerals. The superior Arabic numeral shall also be used to identify the reference in the text.

2. Footnotes to Tables and Figures. Footnotes to a table or figure shall be placed below the table or figure. The footnotes may contain mandatory information that cannot be presented as data within a table. Footnotes shall be numbered separately for each table. Where numerals will lead to ambiguity (for example in connection with a chemical formula), superior letters, asterisks, daggers, and other symbols may be used.

- U. Contractual and Administrative Requirements. A specification shall not include contractual requirements which are properly a part of the contract such as cost, time of delivery, method of payment, liquidated damages, provision for items damaged or destroyed in tests, etc. Contractual, administrative and warranty provisions covered in SF-32, General Provisions Supply Contract, shall not be made part of the requirements in the specification. Contractual and administrative provisions not covered in SF-32 but considered essential for procurement may be indicated as "ordering data" or "features to be included in bids or in the contract" in Section 6. This provision shall be exercised with caution and limited to essential matters.
- V. Definitions in Specification. The inclusion of a definition can be avoided if requirements are properly stated. When the meaning of one or more terms must be established in the specification, definitions shall be placed in the text. However, it is often clearer to list one or more definitions in Section 6, especially where the terms are used throughout the specification. When this is done, either a parenthetical phrase reference to the applicable paragraph in Section 6 shall follow the terms to indicate the existence of a definition or a statement shall be included in the requirements including the definitions of Section 6 as a part of Section 3.
- W. References.
1. References to Other Documents. Referencing is the approved method for including requirements in specifications when this eliminates the repetition of requirements and tests that are adequately set forth elsewhere. However, chain referencing shall be avoided. References shall be restricted to documents that are specifically applicable to the specification, and are current. Care shall be taken in writing the specification to indicate in a positive manner the extent to which each referenced document is applicable. The specifications shall also include any special details called for by the referenced document. Reference to paragraph numbers in other documents shall not be made. The reference shall be to a title, method number, specifically identified requirement, or other definitive designation.

3-W-2. Limitation on References. A specification shall not contain anything in conflict with provisions in referenced documents unless it is desirable to make special exceptions to such provisions, in which case the specific provision to which exception is made shall be stipulated. It is not intended that other documents be made a part of a specification by reference unless the items, materials, tests, or other services in the referenced document are required. The applicability of all referenced documents listed in Section 2 of a specification shall be defined in Sections 3, 4, or 5, as appropriate. The extent of applicability of referenced documents shall also be specified. The entire referenced document shall not be made applicable by reference unless all of its provisions are clearly required.

X. Manufacturer's Drawings. The importance of a complete and accurate drawing package should not be overlooked. Particular attention must be given to non-standard parts and assemblies not readily procurable and which are manufactured "inhouse" by the manufacturer or sub-contracted as a specially manufactured part. Should the need arise to procure additional electronic equipments from other than the original manufacturer, it would be, at best, very expensive for the Coast Guard to fund redevelopment of these non-standard parts. An example of a problem would be transformers wound by the contractor. Without drawing and manufacture process sheets, reprourement would involve research and development. MIL-STD-100 is the primary standard used to define, in detail, what is expected of a good set of drawings. A military specification that may be applicable would MIL-D-1000. However, in circumstances where such a stringent standard doesn't apply, several commercial standards are available. Three widely used ones are American National Standards Institute (ANSI) Y14.1 (Drawing Size and Format), Y 32.2 (Graphic symbols for Electrical and Electronics diagrams) and Y32.16 (Reference designations for Electrical and Electronic Parts and Equipment).

TABLE II-3-1

PHRASES HAVING MULTIPLE MEANINGS

1. To the satisfaction of the contracting officer
2. As determined by the contracting officer
3. In accordance with instructions of the contracting officer
4. As directed by the contracting officer
5. In the opinion of the contracting officer
6. In the judgement of the contracting officer
7. Unless otherwise directed by the contracting officer
8. To furnish, if requested, by the contracting officer
9. All reasonable requests of the contracting officer shall be complied with
10. Photographs shall be taken when and where directed by the contracting officer
11. In strict accordance with
12. In accordance with best commercial practice
13. In accordance with best modern standard practice
14. In accordance with the best engineering practice
15. Workmanship shall be of the highest quality
16. Workmanship shall be of the highest grade
17. Accurate workmanship
18. Securely mounted
19. Installed in a neat and workmanlike manner
20. Skillfully fitted
21. Properly connected
22. Properly assembled
23. Good working order
24. Good materials
25. In accordance with applicable published specifications
26. Products of a recognized reputable manufacturer
27. Tests will be made unless waived
28. Materials shall be of the highest grade, free from defects or imperfections, and of grades approved by the contracting officer
29. Kinks and bends may be cause for rejection
30. Carefully performed
31. Neatly finished
32. Metal parts shall be cleaned before painting
33. Suitably housed
34. Smooth surfaces
35. Pleasing lines
36. Of an approved type
37. Of standard type
38. Any phrase referring to "the Government inspector"

CHAPTER 4. SPECIFICATION SECTION 1: SCOPE

- A. Introduction. This section of the specification is used to present a general overview of the specification or statement of work.
- B. General. Section 1 is not to be used for specifying equipment or documentation requirements which are more applicable to sections 3, 4, or 5. Additionally, Government Furnished Property (GFP) listing and control is presented in this section. The basic regulations governing GFP are the Department of Transportation Procurement Regulations (41 USC 12-79). Finally, the precedence should be outlined to avoid conflicts of requirements. The following pages contain sample paragraphs for section 1.

Section 1 Sample Paragraphs

1. SCOPE

1.1 Purpose. This equipment specification encompasses the requirements and procedures for fabrication of Loran-C transmitter sets and associated equipment and documentation.

1.2 Equipment. This specification sets forth the requirements for the following items:

- a. AN/FPN-96 Loran Transmitting Set
- b. Organizational Level (on-site) spares
- c. Depot Level spares.

1.3 Documentation. This specification sets forth the requirements for documentation.

- a. Engineering drawings and microfilm
- b. Depot Level Technical Documentation (DLTD)
- c. Test plans and test data
- d. Technical Manual

1.4 Government Furnished Property (GFP). Appendix D contains a list of GFP that is available for use by the contractor. The contractor shall submit in his proposal a list of what GFP is required and when it is required. Some GFP in Appendix D is required for the field test and will not be shipped to the contractor until completion of first article tests.

1.4.1 Inspection of GFP: The selected equipment, of Appendix D will be sent to the Coast Guard Inspector in care of the contractor. The contractor shall retain the GFP in its original packing and notify the Contracting Officer upon its arrival. The GFP shall be jointly inspected by the Coast Guard Inspector and the contractor. All discrepancies in the GFP shall be documented during this inspection. At the completion of the contract or when the GFP is no longer required, it shall be reinspected jointly to insure its condition is comparable (except for authorized modifications specified in 3.4) to the condition of the GFP when received by the contractor. After the reinspection, the GFP shall be packed to the same level as received and shipped at the Coast Guard's expense to:

Commanding Officer
U. S. Coast Guard

Electronics Engineering
Center
Wildwood, NJ 08260

Supply Center
830 Third Ave.
Brooklyn, NY
11232

Aircraft Repair &
Supply Center
Elizabeth City,
NC 27909

Section 1 Sample Paragraphs (cont'd)

1.4.2 Control of GFP. Control of GFP shall be in accordance with Department of Transportation (DOT) HANDBOOK DOTPR S-1.

1.5 Precedence. Any ambiguity or conflict between this specification, applicable documents, or the GFP shall be resolved by utilizing the following documents in the precedence shown:

- a. This specification less Appendix C and Appendix D.
- b. Applicable documents.
- c. The engineering drawings (Appendix C) of this specification.
- d. Documents referenced within the engineering drawings.
- e. GFP (Appendix D).



CHAPTER 5. SPECIFICATION SECTION 2: APPLICABLE DOCUMENTS

A. Introduction. Only those documents identified and referred to in Section 3, 4, and 5 of the specification should be listed in Section 2 of the specification. References shall be confined to documents currently available at the time of issuance of the specification. Figures bound integrally with the specification shall not be listed in Section 2.

B. General. Government specifications, standards, drawings and other publications and non-Government documents may be referenced in specifications. Other non-Government documents, of a specific issue, promulgated by industry organizations and technical societies, may also be referenced. Government regulations or codes, such as Federal Insecticide, Fungicide, and Rodenticide, Act, Drug and Cosmetic Act, Federal Hazardous Substances Labeling Act, Atomic Energy Act, and Interstate Commerce Commission regulations and Screw-Thread Standards for Federal Services, shall be referenced in specifications, where applicable. Care shall be taken in referencing non-Government publications to assure the availability of copies and prior approval of the copyright owner. The following pages contain sample paragraphs for section 2.

NOTE: Whenever a document is referenced, CHECK THE ORDERING DATA (section 6 of specifications) for that document to insure that all the required information has been provided.

C. Listing of References. Referenced documents shall be listed by document identifier and title (do not show letters or preparing activity symbols). Titles should be taken from the documents rather than an index.

1. Documents. Government and commercial SPECIFICATIONS, STANDARDS, DRAWINGS, and other PUBLICATIONS shall be listed numerically.

2. Drawings. Where detailed drawings referred to in a specification are listed in an assembly drawing, it is only necessary to list the assembly drawing.

Section 2 Sample Paragraphs

2. APPLICABLE DOCUMENTS

2.1 Applicability. The following documents of the issue in effect on date of invitation for bids or request for bids or request for proposal, form a part of the specification to the extent specified herein. Where the exact issue of a document is specified, that issue shall be used.

2.1.1 Government documents. Substitute U.S. Coast Guard for all other government activities referred to in any of the Government documents that form a part of this specification.

2.1.1.1 Federal Specifications.

F-F-351 Filters and Filter Elements, Fluid, Pressure, Lubrication Oil, Bypass and Full Flow

2.1.1.2 Military specifications.

MIL-C-104 Crates, Wood: Lumber and Plywood, Nailed and Bolted

MIL-P-116 Preservation-Packaging, Methods of

2.1.1.3 Federal standards.

FED-STD-5 Standard Guides for Preparation of Proposed Item Logistics Data Records

2.1.1.4 Military standards.

DOD-STD-100 Engineering Drawing Practices

MIL-STD-167-1 Mechanical Vibrations of Shipboard Equipment

2.1.2 Non-Government documents.

ASTM A-36 Structural Steel

IEEE-45 Recommended Practices for Electrical Installations on Shipboard

2.2 Drawings. The following U. S. Coast Guard Ocean Engineering Drawings form of this specification to the extent specified herein:

120050 Six-Place Lampchanger
120085 Buoy Lantern

Section 2 Sample Paragraphs (cont'd)

Section 2 Sample Paragraphs(cont'd)

2.3 Source of Government documents. Any difficulty in obtaining the applicable documents should be referred to the Contracting Officer. The documents may be obtained from the following:

Government specifications/standards:
Commanding Officer
U.S. Naval Publications and Forms Center
5801 Tabor Ave.
Philadelphia, PA. 19120

Federal handbooks:
Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

Coast Guard and DOT publications and documents from the Contracting Officer.

ANSI Documents:
American National Standards Institute, Inc.
1430 Broadway
New York, NY 10018

ASCE Documents:
American Society of Civil Engineers
345 E. 47th St.
New York, NY 10017

ASME Documents:
American Society of Mechanical Engineers
345 E. 47th St.
New York, NY 10017

ASTM Documents:
American Society of Testing and Materials
1916 Race St.
Philadelphia, PA. 19103

AWS Documents:
American Welding Society
2501 N.W. 7th St.
Miami, FL 33125

EIA Documents:
Electronics Industries Association
2001 Eye St. N.W.
Washington, DC 20006

Section 2 Sample Paragraphs (cont'd)

Section 2 Sample Paragraphs(cont'd)

IEEE Documents:

Institute of Electrical and Electronic Engineers
345 E. 47th St.
New York, NY 10017

ICP Documents:

Institute of Printed Circuits
1717 Howard St.
Evanston, ILL. 60201

NEMA Documents:

National Electrical Manufacturer Association
155 E. 44th St.
New York, New York 10017

NFPA Publications:

National Fire Protection Association
470 Atlantic Ave.
Boston, MA. 02210

CHAPTER 7. SPECIFICATION SECTION 4: QUALITY ASSURANCE

- A. Introduction. Quality assurance is all those planned or systematic actions necessary to provide adequate confidence that products or services will satisfy given needs (expressed as specification requirements). This confidence is gained by performance of quality assurance inspections.
- B. General. Inspection is the key to the Coast Guard's ability to enforce the specification requirements of a contract. Unless an inspection has been conducted, there can be no assurance that the products and services conform to the contract specification requirements.
- C. Definitions. These terms are frequently misused or used interchangeably. This can result in misinterpretation or ambiguity in the quality assurance requirements.
1. Inspection. Inspection is the examination (including testing) of supplies and services (including, when appropriate, raw materials, components, and intermediate assemblies) to determine whether the supplies and services conform to contract specification requirements.
 2. Testing. Testing is an element of inspection generally denoting the determination by technical means of the properties or elements of supplies, or components thereof, and involves the application of scientific principles and procedures.
 3. Test Plan. The test plan is an overall summary of the procedures to be utilized to insure the quality of an item. The following information is normally included:
 1. Chronological listing of inspections.
 2. Location.
 3. Responsibilities.
 4. Equipment required.
 5. Test procedures.
 6. Documentation and records.
 7. Action required in the event of failures.
 4. Test Procedures. The test procedures detail the exact sequence of steps to be followed to determine the technical properties or elements of an item. The test procedures should be developed by the contractor with Coast Guard approval authority. The procedures should include, as minimum, verification of all performance requirements indicated in the specification.
- D. Inspection. Inspection generally consists of on-scene verification of equipment performance. Verification is of two basic types of inspection: first article and quality conformance.

7-D-1. First Article. A first article in the form of a prototype, engineering model or a first production unit may be required as part of the specification. The primary purpose of the first article equipment is to determine that the contractor is capable of manufacturing acceptable production equipments. Satisfactory completion of first article evaluation in no way guarantees that production equipments will be satisfactory. A requirement for a first article increases the delivery time of production equipments. Satisfactory completion of first article testing includes manufacturers' laboratory tests as well as tests under actual field conditions. These tests often result in changes to the equipment to perform in accordance with the specifications, in which case time is lost while redesign is pursued. Changes sometimes are required due to unexpected field usage problems, in which case costs as well as time are involved.

2. Quality Conformance Inspection. Quality conformance inspections are normally performed by the contractor with or without Coast Guard participation. These tests are meant to determine that the end products conform to the applicable specification requirements. The specification must indicate the extent of testing required and the Coast Guard should have approval authority over the test procedures. Significant parameters are usually verified. The extent of actual testing depends upon: critical performance criteria, quantity of equipment procured, equipment complexity, and confidence in the contractor.

E. Inspection Categories. For standardization purposes, the following preferred designations are used for completing the specification. (See figure 1)

1. First Article (F/A) Inspection. (Includes preproduction models, initial production samples, test samples, first lots, pilot models, pilot lots, and prototype models.) First Article Inspection is used primarily when equipment development is required prior to production but after the contract award. F/A Inspection is required to assure that the design and manufacturing process will yield a product that fully complies with the specification requirements. F/A Inspection should include verification of all specification parameters.

2. Qualification Inspection. Qualification Inspection is primarily for use when a specification is developed in anticipation of establishing a Qualified Product List (QPL). In this case, inspection is performed prior to contract award. A list of contractors is then established and (theoretically) First Article Inspection will not be required upon award of contract. Note, however, that there may be various means in the specification for "retention" of Qualification. The purpose of Qualification Inspection is virtually identical to that of First Article Inspection, the primary difference being whether the inspection is before or after award.

- 7-E-3. Full Compliance Inspection. Full Compliance Inspections are equivalent to First Article Inspection except that this term is recommended for use with a Brand Name or Equal contract since development is not required and the equipments are (theroretically) already in production.
4. Quality Conformance Inspection. Quality Conformance Inspections are performed on production equipment to determine the quality of products offered for acceptance. Normally the contractor will have performed 100% production inspection prior to offering the equipment for acceptance. In addition, many of the tests which are anticipated as being Production Control will also have been performed on all equipments during the initial alignment. Therefore, it should be kept in mind that CG inspection is actually verification of the contractors inspection program.
- a. Production Inspection. (Group A Test) Production Inspection may vary from 100% screening of the item offered for acceptance (low quantity, high complexity equipment) to relatively large sample inspections (high quantity, low complexity). Inspections are intended to be relatively simple, of short term, and use relatively simple test equipment. These inspections primarily detect workmanship problems and errors in adjustment. Baseline sampling levels are Levels I, II, and III of MIL-STD-105. Inspection/Test duration is on the order of 15 minutes or less per test/inspection (not including setup time). These inspections do not damage the equipment and refurbishment is not required. Production Inspections should involve verification of basic parameters which indicate that the equipment is operating satisfactorily.
- b. Production Control Inspection. (Group B Tests) Production Control Inspections are performed on a sampling basis. They involve more complex test equipment and a greater time element (up to one day). These inspections will detect variances in design, manufacturing processes and component parts. Smaller samples are used such as Levels S3, S4, and I of MIL-STD-105.

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7-E-c. Environmental Inspection. (Group C Tests) Environmental Inspections are held on a relatively small sample. These inspections involve complex test equipment and are rather lengthy, one day to 2 months. There may be deterioration or damage (sometimes complete destruction) from this type of inspection and refurbishment is usually in order. In cases where destructive inspections are required the quantity of deliverable units must be appropriately adjusted. Baseline sampling Levels are S2, S3 and S4 of MIL-STD-105. Note: Sampling Levels referred to in MIL-STD-105 are valid for larger quantity shipments (200 or greater). Limited data is available for smaller lots and is in the process of being assembled and calculated.

F. Provisions. Quality assurance provisions of specifications should include all the examinations and tests to be performed in order to determine that the product offered for acceptance conforms to the requirements of the specification. Complete information should be provided concerning the classification, sampling and inspection, applicable test methods, sequence of tests, and test data required. The specification should impose quality assurance procedures on contractors which are no less efficient and effective than would normally be used by the industry. Section 4 should specify inspection (examination and tests) to the following levels.

1. Provides an inspection requirement and method for each requirement in Sections 3 and 5. The methods (examination and tests) specified should include review of test data and cause for rejection.
2. Describes the methods only to the level of detail necessary to clearly establish conformance with the requirements of the specification and provide comparability of test results.
3. Provides ready identification of each inspection requirement with the appropriate requirement paragraph.

TABLE II-7-I
INSPECTION CATEGORIES

<u>Qualified Product List</u>	<u>Design/Performance</u>	<u>Brand Name or Equal</u>
Qualification Inspection	Contract Award	Contract Award
*	*	*
*	*	*
*	*	*
*	*	*
Contract Award	First Article Inspection	Full Compliance Inspection
*	*	*
*	*	*
*	*	*
*	*	*
Quality Conformance Inspection	Production Authorization	Quality Conformance Inspection
	*	
	*	
	*	
	*	
	Quality Conformance Inspection	

Section 4 Sample Paragraphs (Simple)

4. QUALITY ASSURANCE PROVISIONS

4.1 General. The Contractor shall maintain an inspection system which shall insure that each item offered to the Coast Guard for acceptance or approval conforms to contract requirements. The inspection system shall be documented and available for review by the Coast Guard Inspector.

4.1.1 Records. The Contractor shall maintain records of all inspections and tests. The records shall indicate the nature and number of observations made, the number and type of deficiencies found and the corrective action taken.

4.1.2 Contractor's calibration system. The Contractor shall maintain a calibration and maintenance system to control the accuracy of measurement and test equipment used in the fulfillment of this specification. The system shall include as a minimum prescribed calibration intervals, source of calibration and a monitoring system to insure adherence to calibration schedules. Documentation in support of this requirement shall be readily available to the Coast Guard Inspector.

4.1.3 Responsibility for inspection. The Contractor shall be responsible for the performance of all inspection requirements specified herein. The Contractor shall provide space, personnel and test equipment for the conduct of all inspection requirements. All inspection and testing shall be performed at the Contractor's plant or at other facilities acceptable to the Coast Guard. The Coast Guard reserves the right to verify or have performed any of the inspections set forth in this specification where such inspections are deemed necessary to assure that supplies and services conform to the prescribed requirements. The Contractor shall notify the Contracting Officer 10 calendar days prior to the scheduled commencement of any inspections required by this specification.

4.1.4 Test plans. The Contractor shall submit to the Contracting Officer for approval a detailed test plan for all tests specified herein. These test plans shall be submitted to the Contracting Officer not later than 60 days prior to the commencement of first article testing. As a minimum these test plans shall include:

- a. A chronological listing of the tests to be performed.
- b. Location of test facility.
- c. A complete listing of all equipment to be used.
- d. Detailed test procedures for the test configuration and pass/fail criteria.
- e. All information necessary to fully describe the test.

Section 4 Sample Paragraphs (Simple) (cont'd)

f. Test data sheets shall be provided with the test plan and shall be used to record observed performance data. Included with the completed test data sheet shall be a summary of all deficiencies noted and the corrective action taken. It shall also include any recommended changes to the detailed test procedures. The data sheet shall include as a minimum the following:

1. Time and date of test.
2. Equipment serial numbers.
3. Test equipment and serial numbers.
4. Name of test being performed. Include reference to the requirement and test paragraphs of this specification and reference the applicable test plan paragraph.
5. Pass/fail criteria.
6. Actual measured values.
7. Date and signatures of test personnel.
8. Appropriate space for the Coast Guard Inspector's signature.

4.2 Inspections. The inspections required herein are the minimum required and are not intended to supplant any controls, examination, inspections or tests normally employed by the Contractor to assure the quality of the equipment. The following types of inspections are required:

- a. Visual.
- b. First article (including environmental).
- c. Production.

4.2.1 Failure responsibility. If an equipment or any portion thereof fails to pass any inspection required by this specification, the Contractor shall take corrective action on the materials or process, or both as warranted, on all items or portions thereof which were similarly manufactured which are subject to the same cause for failure. Depending on the type or number of failures, the inspection may be discontinued at the option of the Coast Guard until all corrective action has been taken. After all corrective action has been taken, the inspection shall be continued or repeated, at the option of the Coast Guard, depending on the reason for which the inspection was interrupted. Acceptance will be withheld until reinspection has shown that the corrective action was successful and the equipment or portion thereof satisfactorily passes all inspections.

4.2.2 Visual. Prior to all testing, all components shall be visually inspected for quality of workmanship, conformity to this specification and the intrinsic safety of equipment operation and the test apparatus.

Section 4 Sample Paragraphs (Simple) (cont'd)

4.2.3 First article. The first article offered shall undergo complete testing to demonstrate compliance with all requirements (including environmental) specified herein. Upon satisfactory completion of the first article inspection, the first article equipment shall be restored to meet all inspection requirements for production equipment prior to delivery as a production equipment. This testing will be witnessed by a Coast Guard Inspector(s).

4.2.4 Production. A production test shall be performed on every shipset offered for acceptance. All production tests shall be at the ambient air temperature and shall include operation of the shipset as a complete system at full rated speed and load for each diesel generator for not less than one hour after all engine operating temperatures have stabilized. Additionally, both the automatic and manual controls shall be operated or caused to operate.

4.3 Documentation. Preliminary documentation submitted for approval will be returned to the Contractor either approved; approved with corrections, deletions or additions to be made as noted; or disapproved requiring resubmission until in conformance with the requirements specified herein. Approval of any preliminary documentation shall not relieve the Contractor of the responsibility for complying with the requirements specified herein. A minimum of 60 days should be allowed for Coast Guard review. Resubmission shall be made within 30 days of receipt of notice that changes are required.

4.3.1 Approval and acceptance. Final approval and acceptance of the documentation required herein shall be by letter of approval and acceptance. Any letter of acknowledgement of receipt of material shall not be construed as a waiver of review or as an approval of the material submitted as being in conformance with this specification. Any approval given during preparation of the documentation, or approval for shipment of any reproduced documentation resulting therefrom, shall not be considered as a guarantee of the final acceptance of the completed documentation.

Section 4 Sample Paragraphs (Complex)

4. QUALITY ASSURANCE PROVISIONS

4.1 General. The contractor shall maintain an inspection system which shall insure that each item offered to the Coast Guard for acceptance or approval conforms to contract requirements. The inspection system shall be documented and available for review by the Coast Guard Inspector.

4.1.1 Records. The contractor shall maintain records of all inspections and tests. The records shall indicate the nature and number of observations made, the number and type of deficiencies found and the corrective action taken.

4.1.2 Contractor's calibration system. The contractor shall maintain a calibration and maintenance system to control the accuracy of measurement and test equipment used in the fulfillment of this contract. The system shall include, as a minimum, prescribed calibration intervals, source of calibration and a monitoring system to insure adherence to calibration schedules. Documentation in support of this requirement shall be readily available to the Coast Guard Inspector.

4.1.3 Responsibility for inspection. The contractor shall be responsible for the performance of all inspection requirements as specified herein. The contractor shall provide space, personnel, and test equipment for the conduct of all inspection requirements. All testing and inspection shall be performed at the contractor's plant, or at other facilities acceptable to the Coast Guard. The Coast Guard reserves the right to verify or perform any of the inspections set forth in this specification where such inspections are deemed necessary to assure that supplies and services conform to the prescribed requirements. The contractor shall notify the Contracting Officer 10 calendar days prior to the scheduled commencement of any tests required by this specification.

4.1.4 Test plans. The contractor shall submit to the Contracting Officer for approval a detailed test plan for all tests to show compliance with the requirements outlined in this specification. These test plans shall be submitted to the Contracting Officer not later than 60 calendar days prior to commencement of scheduled testing. As a minimum, these test plans shall include:

- a. A chronological listing of the tests to be performed.
- b. Location of test facility
- c. A complete listing of all equipment to be used.

Section 4 Sample Paragraphs (Complex) (cont'd)

- d. Detailed test procedures for the test configuration and pass/fail criteria. During the conduct of all tests, no alignment or adjustment other than the accessible front panel controls employed for operation of the equipment shall be made, unless specifically required in the test procedures.
- e. All information necessary to fully describe the test.
- f. Test data sheets shall be provided with the test plan and shall be used to record observed performance data. Included with the completed test data sheet shall be a summary of all deficiencies noted and the corrective action taken. It shall also include any recommended changes to the detailed test procedures. The data sheet shall include as a minimum the following:

1. Time and date of test.
2. Equipment serial numbers.
3. Test equipment and serial numbers.
4. Name of test being performed. Include reference to the requirement and test paragraphs of this specification and reference the applicable test plan paragraph.
5. Pass/fail criteria.
6. Actual measured values.
7. Date and signatures of test personnel.
8. Appropriate space for the Coast Guard Inspector's signature.

4.1.4.2 History data sheets. The contractor shall provide with each item offered for acceptance a history data sheet prepared at the time of manufacture. Such data sheets shall not be attached but shall remain with the item during all phases of inspection and repair. Each history data sheet shall contain the following information:

- a. Item part and identifying number.
- b. Date of fabrication.
- c. Date and results of Visual Inspection.
- d. Burn-in (3.10).
 1. Date of start of ____ hour burn-in.
 2. Itemized failures and corrective action taken during ____ hour burn-in, including time of failure.
 3. Date of reburn-in, if necessary.
 4. Date of completion of ____ hour burn-in.
- e. Reliability.
- f. Date and results of module test with itemized listing of defects and corrective action taken (if applicable.)
- g. Date presented for Final System Acceptance.
- h. Space for additional remarks or entries.

Section 4 Sample Paragraphs (Complex) (cont'd)

4.1.4.3 Distribution.

a. Completed test data sheets. At least ten calendar days prior to commencement of preparation for delivery of each shipping lot, copies of the data shall be distributed as follows:

1. One copy shipped with the item for which the data was taken.
2. Two copies delivered to the Contracting Officer.
3. The original presented to the Coast Guard Inspector.

b. Completed history data sheets. Completed history data sheets shall be given to the Coast Guard Inspector when the item has successfully completed all testing.

4.1.5 Resident Coast Guard Inspector. A Resident Coast Guard Inspector may be assigned. All outgoing correspondence pertinent to the contract shall be routed through the Resident Inspector. The contractor shall make available the following office services for Coast Guard use:

- a. A private single occupancy office, large enough to comfortably accommodate up to four persons in addition to the inspector for short durations.
- b. Office furniture including desk, table, chairs, drafting table, filing cabinet, bookcase, and coat rack.
- c. Office supplies including a typewriter.
- d. Secretarial assistance on an "as needed" basis of no more than 20 hours per month.
- e. Telephone service.

4.2 Inspections. The inspections required herein are the minimum required and are not intended to supplant any controls, examinations, inspections or tests normally employed by the Contractor to assure the quality of the equipment. The following types of inspections are required:

a. First article inspection.

1. Incoming part test.
2. Visual inspection.
3. Burn-in.
4. In-plant test.
5. Field test.

b. Reliability qualification.

Section 4 Sample Paragraphs (Complex) (cont'd)

c. Quality conformance inspection.

1. Incoming part test.
2. Visual inspection.
3. Burn-in.
4. Reliability production test.
5. Module Test.
6. Final system acceptance test.

4.2.1 Failure responsibility. If an equipment of any portion thereof fails to pass any inspection required by this specification, the Contractor shall take corrective action on the materials or process, or both as warranted, on all items or portions thereof which were similarly manufactured which are subject to the same cause for failure. Depending on the type of number of failures, the inspection may be discontinued at the option of the Coast Guard until all corrective action has been taken. After all corrective action has been taken, the inspection shall be continued or repeated, depending on the reason for which the inspection was interrupted, at the option of the Coast Guard. Acceptance shall be withheld until reinspection has shown that the corrective action was successful and the equipment or portion thereof satisfactorily passes all inspections.

4.3 First article inspection. The contractor shall perform first article inspection in accordance with Table I of the items listed in 3.2.

4.3.1 Contractor responsibilities. The contractor shall be responsible for the following:

- a. Developing the in-plant plans in accordance with 4.1.4.
- b. Shipment of the first articles, with a copy of their respective history data sheets and in-plant test data sheets, to the Coast Guard Electronics Engineering Center, Wildwood, New Jersey and their return to the contractor's facility.
- c. Conducting the in-plant tests, recording the test data, and distributing of test data sheets.

4.3.2 Government responsibilities. The Coast Guard will responsible for witnessing the in-plant and conducting the field test and approving the first articles or taking other actions(s) specified or warranted in the first article clause of the contract.

4.3.3 Incoming part test. The contractor shall test the incoming items in accordance with 4.5.2 prior to installation in any of the first articles listed in 3.5.

Section 4 Sample Paragraphs (Complex) (cont'd)

4.3.4 Visual inspection. The contractor shall perform a visual inspection in accordance with 4.5.2 on each of the first articles listed in 3.5 prior to the 100 hour burn-in.

4.3.5 Burn-in. A dynamic burn-in (see 3.10) of the items of 3.5 shall be performed in a contractor furnished test fixture or a partial/completed system for a minimum of ____ hours.

4.3.6 In-plant test. The contractor shall test each of the first articles listed in 3.5 in accordance with the contractor developed test plan. This test plan shall be submitted in accordance with 4.1.4 and shall include, as a minimum, the tests specified in Table I.

4.3.7 Field test. Upon successful completion of the in-plant test, the first article shall be field tested by the Coast Guard at the Coast Guard Electronics Engineering Center, Wildwood, New Jersey. The field test shall be in accordance with the field test plan outlined in Appendix _____. In general, field testing will consist of the first articles being placed in the GFP transmitter at Wildwood, N.J.. The transmitter will be operated prior to insertion of the first article to obtain baseline data (approved field test plan) on the transmitter and the item to be replaced. The first articles may be tested as they become available. Failure of the transmitter (traceable to failure of the first article) and/or the first article to meet the performance parameters established by the baseline data shall be cause for rejection. Any mechanical defects peculiar to the first article shall be cause for rejection.

4.3.8 First article approval. Upon completion of the required tests, the Contracting Officer shall either approve the first article for production or take such actions as circumstances require in accordance with the first article clause of the contract.

4.4 Reliability. (Discussion. The basic military specification for reliability is MIL-STD-781. The latest edition, C, is a complete revision. Spec writers are cautioned to read and understand the new edition prior to specifying its use for testing. Reliability predictions are outlined in MIL-HDBK-217.)

4.5 Quality conformance inspection. The Contractor shall perform the following quality conformance inspections in accordance with Table I:

- a. Production Tests (Screening).
- b. Production Control Tests.
- c. Environmental (Sample).
- d. Production Reliability.
- e. Maintainability.

Section 4 Sample Paragraphs (Complex) (cont'd)

4.5.1 Resubmitted lots. If an inspection lot is unacceptable, the manufacturer may rework the lot or screen out defectives and resubmit it for acceptance inspection. Resubmitted lots shall be kept separate from new lots. The resubmitted lot shall be inspected:

- a. Using tightened inspection if MIL-STD-105 is specified.
- b. Double the sample rate if a percentage sample is specified.

4.5.2 Production. A production test shall be performed on every unit offered for acceptance. Production testing shall be as specified in Table I.

4.5.3 Production control inspection. Production Control Tests shall be performed on 10% (20%, AQL specified etc.) of the units offered for acceptance. Production Control Tests shall be as specified in Table I. Sample units shall be chosen at random by the Coast Guard Inspector.

4.6 Documentation. Preliminary documentation submitted for approval will be returned to the Contractor either approved; approved with corrections, deletions or additions to be made as noted; or disapproved requiring resubmission until in conformance with the requirements specified herein. Approval of any preliminary documentation shall not relieve the Contractor of the responsibility for complying with the requirements specified herein. A minimum of 60 days should be allowed for Coast Guard review. Resubmission shall be made within 30 days of receipt of notice that changes are required.

4.6.1 Approval and acceptance. Final approval and acceptance of the documentation required herein shall be by letter of approval and acceptance. Any letter of acknowledgement of receipt of material shall not be construed as a waiver of review or as an approval of the material submitted as being in conformance with this specification. Any approval given during preparation of the documentation, or approval for shipment of any reproduced documentation resulting therefrom, shall not be considered as a guarantee of the final acceptance of the completed documentation.

Section 4 Sample Paragraphs (Complex) (cont'd)

Table I
Quality Assurance Inspection

Test	Requirement	Test Method	In-Plant	Field Test
First Article (Para.____)				
Power Output	3.6.1	4.3	x	x
Vibration	3.7	4.16	x	
Field Test (Para.____)				
Power Output	3.6.1	4.3.2		x
IM Distortion	3.6.3	4.8		x
Quality Conformance				
Screening (100%)				
(Para.____)				
[or Production Test]				
Workmanship	3.14		x	x
Sensitivity	3.6.5	4.5	x	x
Sampling (Para.____)				
[or Production Control Test]				
IM Distortion	3.6.3	4.8	x	x
Sampling (Para.____)				
[or Environmental]				
Reliability	3.4	4.18	x	



CHAPTER 8. SPECIFICATION SECTION 5: PREPARATION FOR DELIVERY

- A. Introduction. Often the preservation, packaging and packing (PPP) is only an afterthought after the specification is written. The specification writer should realize that the PPP has a significant impact on the contract price. Depending on the type of PPP specified, there may not only be special materials required but extensive testing including a first article packaging plan and test.
- B. General. It is imperative that the levels of PPP and their applications be known. The following definitions are needed for a proper determination of PPP requirements.
1. Preservation and Packaging. The application or use of adequate protective measures to prevent corrosion, deterioration, and physical damage including the use of appropriate preservatives, protective wrappings, cushioning, interior containers, and the complete identification marking up to but not including the exterior shipping container.
 2. Packing. The application or use of exterior shipping containers or other shipping media and the assembling of items or packages therein together with the necessary blocking, bracing, cushioning, weather-proofing, exterior strapping, and marking of the shipping container.
 3. Level A. The level required to afford adequate protection during shipment, multiple handling, unknown storage conditions during worldwide distribution.
 4. Level B. Similar to LEVEL A except for domestic distribution and storage conditions are less severe.
 5. Level C. The level required to afford adequate protection during direct domestic shipment under favorable conditions from the supply source to the first receiving activity for limited storage or immediate use.
 - d. Standard Commercial Practice. The level in accordance with the manufacturers commercial practice.
- C. Determine Your Requirements. Do not fall into a habit of using paragraphs from previous contracts without thoroughly investigating their present applicability. As a specification writer, there are certain questions that must be asked before your PPP requirements can be determined.
1. What is the final destination?
 2. What possible multiple handling and modes of shipment will be made enroute to the final destination?
 3. What types of environmental conditions will be encountered?

- 8-C-4. What types and length of storage will be encountered?
5. Will the equipment be unpacked for storage at a Supply Center then later repacked?
 6. Will this be a domestic shipment from the contractor direct to the user?
 7. Is the Coast Guard prepared to pay for the testing required if a MIL SPEC/STD PPP is a requirement of the specifications?
 8. Would "acceptance at destination," making the contractor responsible for the safe arrival of the equipment, reduce your PPP requirements?

D. Use of the PPP Specifications and Standards. Thoroughly understanding the requirements will enable the writer to tailor the MIL SPEC/STD to their needs. The specification can specify what portions of the MIL SPEC/STD shall or shall not be required. Be specific when tailoring the specification as to PPP and the associated testing to meet your requirements. MIL-STD-794 is an excellent reference for determining exact packaging and packing requirements. For shipping printed circuit boards and modules to repair facilities, FED-SPEC PPP-8-1672 lists shipping boxes that are reusable. These boxes are also listed in the GSA General Supply Catalog.

Section 5 Sample Paragraphs

Level A or B

5.1 Preservation, Packaging and Packing. Each item shall be individually preserved, packaged and packed. Preservation and packaging shall be in accordance with MIL-P-116, Method _____, Submethod _____. Quality Conformance tests (are/are not) required. Packing shall be Level (A/B) in accordance with MIL-E-17555. Descriptive details and plans of the first article pack (are/are not) required. A First Article test (is/is not) required. Rough Handling test, _____, and (are/are not) required. A First Article Test Plan (is/is not) required.

Level C

5.1 Preservation, Packaging, and Packing. Each item shall have preservation and packaging in accordance with MIL-P-116, Method _____, Submethod _____. Quality Conformance tests (are/are not) required. Each item shall be packed in accordance with MIL-E-17555, Level C. Descriptive details and plans of the first article pack (are/are not) required.

Commercial Packaging

5.1 Preservation, Packaging, and Packing. Preservation, Packaging, and Packing shall be in accordance with MIL-STD-1188.

Or

5.1 Preservation, Packaging, and Packing. Subject to the limitations set forth below, commercial preservation, packing and marking is acceptable for the procurement.

5.1.1 Protection. Items shall be afforded adequate protection against deterioration and damage during handling and shipment. Packaging and marking shall be suitable for distribution to retail outlets.

5.1.2 Bulk shipments. Unless otherwise specified, bulk preservation, packing and marking such as is used in inter and intraplant shipments, and for shipment to repackaging jobbers and part distribution outlets for represervation and packing is not acceptable.

5.1.3 Requirements. Preservation, packing and marking furnished by the supplier shall meet or exceed the following minimum requirements.

Section 5 Sample Paragraphs (cont'd)

5.1.3.1 Cleanliness. Items shall be free from dirt and contaminants which would contribute to deterioration of the item or which would require cleaning by the customer prior to use. Coatings and preservatives applied to the item for protection are not considered contaminants.

5.1.3.2 Preservative. Items susceptible to corrosion or deterioration shall be provided protection such as preservative coatings, volatile corrosion inhibitors or desiccate unit packs.

5.1.3.3 Cushioning. Items requiring surface protection from physical and mechanical damage or which are fragile in nature shall be protected by wrapping, cushioning, pack compartmentization, cartonizing, or other means to distribute shock and vibration during handling and shipment.

5.1.3.4 Unit quantity. Unless otherwise specified, the unit quantity shall not exceed 50 pieces or 25 pounds whichever occurs first. Single items weighing over 10 pounds shall be individually packaged. Unless otherwise specified, intermediate packing of unit packs is not required but is acceptable.

5.1.3.5 Packing. Unit packs shall be packed in exterior shipping containers meet common carrier acceptance and provide safe delivery to destination at lowest rates in compliance with carrier rules applicable to the mode of shipment.

5.1.3.6 Packaging of kits and sets. Kits and sets shall be individually packaged. Each kit or set shall include a content listing.

5.2 Marking. Unless otherwise specified, unit, intermediate (when provided) and exterior packs shall, as a minimum, be marked by any means which provides legibility as follows:

- a. National Stock Number (NSN) or part number when NSN is not available.
- b. Noun nomenclature.
- c. Quantity and unit of issue.
- d. Contract, purchase order or delivery order number.
- e. Additional markings as may be required by the Contract.
- f. Exterior shipping containers shall be marked with the appropriate address and caution marking except for full carloads or full truckloads to a single CONUS consignee.

Standard Commercial Practice

5.1 Preservation, Packaging, and Packing. Preservation, Packaging, and Packing shall be in accordance with the manufacturer's commercial practice.

Section 5 Sample Paragraphs (cont'd)

Combination Requirements

(Different levels of protection may be combined. As an example, the following standard paragraph is for spare parts which will be domestically shipped to a Supply Center, unpacked, and stored on shelves or in bins for an indefinite time and then later repacked for worldwide distribution.)

5.1 Preservation, Packaging, and Packing. Preservation and packing shall be in accordance with MIL-P-116, Method _____, Submethod _____. Quality Conformance tests (are/are not) required. Packing shall be in accordance with (the contractor's Standard Commercial Practice/Commercial pack MIL-STD-1188).

5.2 Marking of Cases. Each individual shipping container shall be legibly stenciled in one-half (1/2) inch minimum letters on the outside with the following:

- a. Nomenclature (model or type and item name).
- b. Serial number.
- c. Contract number.
- d. Stock number (if available).
- e. Consignee's name and address.
- f. "Mark For" instructions.

5.3 Material Inspection and Receiving Report (Form DD-250): A Form DD-250 shall be used as certification of Production Quality Assurance (PQA), packing list, and certification of acceptance. A separate DD-250 shall be prepared by the contractor for each shipping lot of each item. It shall list by number each individual item in the shipment. It shall list the accessories (instruction booklets, power cable, etc.), contained within the carton for an individual item. Ten (10) copies of the signed DD-250 shall be given to the Coast Guard Inspector.



CHAPTER 9. SPECIFICATION SECTION 6: NOTES

- A. Introduction. Often it is helpful to include information of a general or explanatory nature but which are not requirements.
- B. General. This section shall contain information, not contractually binding, designed to assist in determining the applicability of the specification and the selection of appropriate type, grade, or class of the item. This section may include, but not limited to, the following information.
 - 1. Background information.
 - 2. Ordering data.
 - 3. Definitions.
 - 4. Cross-reference of classifications.
 - 5. Miscellaneous notes.

Section 6 Sample Paragraphs

6. NOTES

6.1 Background information. The following is given as background information only and do not form a part of the requirements specified herein.

6.2 Definitions. The definitions below from a part of the requirements specified in Section 3 herein.

6.3 Ordering data. Procurement documents should stipulate the following:

- a. Title, number and date of specification.
- b. Classifications(s) required (see 1.2): type(s), class(es) and whether the individual items or complete assemblies are required.
- c. Quantities of each classification required.
- d. Federal stock numbers.
- e. Level of packing (see 5.1).

CHAPTER 10. TECHNICAL PROPOSALS

- A. Introduction. The second most difficult thing to write, after writing the statement of work, is the technical proposal requirements and the evaluation criteria.
- B. General. The Federal Procurement Regulations and Department of Transportation Orders specify the details of procurement by Two-Step or Negotiation. This chapter provides sample paragraphs for requiring technical proposals and evaluation criteria.
- C. Evaluation Procedures Through a carefully controlled evaluation process, a board of Coast Guard personnel will designate those proposals they determine to be technically acceptable. This board will categorize all proposals as acceptable or not acceptable.
- D. Contractual Procedures Upon completion of step one, a formally advertised procurement in accordance with subparts 1-2.2, 1-2.3 and 1-2.4 Federal Procurement Regulations will be conducted. Step two will only be issued to those offerors who submitted a technical proposal determined to be acceptable under one step. Any contract executed, as a result of step one, will incorporate the appropriate clauses for a Firm-Fixed Price Contract.

Technical Proposal Sample Paragraphs

3. Technical proposal. Content is more important than quantity. Pages are to be typewritten, no smaller than 10 point type on standard 8 X 10-1/2 or 8-1/2 X 11 inch paper. Foldouts are permitted. Proposals shall be neat, legible, and orderly. However, unnecessary elaborate brochures or other presentations beyond those sufficient to present a complete and effective proposal are not desired. Elaborate artwork, expensive paper and bindings as well as visual or other extensive presentation aids are neither necessary nor desired.

3. .1 Outline of the technical proposal. The technical proposal shall be bound separately and shall contain, as a minimum, the information required by this section, and be presented in accordance with the following outline to simplify evaluation:

3. .1.1 Summary. Summarize all the points developed in the proposal without mention of price. Summarize salient points of the proposal in reference to anticipated problems. Summarize the proposer's knowledge of the problems.

3. .1.2 Experience. The discussion of applicable experience shall be limited to description of experience in the specific field and/or with the equipment of the type sought in this procurement.

3. .1.3 Enclosures. This section shall list all enclosures which form a part of the technical proposal.

3. .1.4. Technical details. This section shall be as follows:

- a. All information shall be arranged in the same order as the requirements of the specification.
- b. The applicable specification paragraph number shall precede each corresponding paragraph of the proposal.
- c. Items of information shall be clearly separated from each other by means of extra spaces between adjacent items.
- d. Details shall be provided to demonstrate how the proposer plans to meet all requirements of every paragraph of the specification. Selected paragraphs in the specification may state that the proposal must address specific points of interest. This does not affect the requirement that the proposer addresses every paragraph. The information shall be provided in sufficient detail that further clarification is not required.

Technical Proposal Sample Paragraphs (cont'd)

e. Foldouts may be used to present diagrams and schedules; each foldout shall be identified by title, figure number applicable paragraph of the specification.

f. The manufacturer's technical booklet and test plan are not to be bound with the technical proposal, but one copy of each shall be provided as an enclosure for each technical proposal.

g. Only published references shall be cited and they shall be identified by Title, Author and Source.

h. The proposer should carefully review his proposal against the specification to ensure that no item or information has been omitted.

3. 1.5 Supplementary information. This section may contain supplementary technical information which the proposer considers relevant to this solicitation. This information shall not exceed twenty-five (25) pages, and shall not mention price, or financial capacity of the offeror.

3. 2 Technical evaluation criteria. The technical proposals will be evaluated on the basis of the following criteria:

a. General quality and responsiveness of proposal.

1. Grasp of the problem.
2. Completeness and thoroughness.
3. Concept and approach.

b. Technical approach.

1. Proposed standards to be employed in the implementation of proposal.
2. Discussion of problem solutions.
3. Implementation methodology.

c. Organizational experience.

1. Adequacy of facilities.
2. Previous related project work.

d. Project team ability and experience.

1. Proposed project staffing, including personnel qualifications and experience.



CHAPTER 11. SPECIFICATION OUTLINES

- A. Introduction. Even though specifications are divided into three major types, their presentation of requirements are similar. The major difference being in the extent and type of requirements contained in section 3.
- B. General. The following pages will present, in detail, recommended formats to be followed when preparing specifications and statements of work. Each has an outline and an explanation/suggested format for each requirement. Since each specification and statement of work is unique, the writer should adjust the outlines to meet his requirements. The major adjustment should occur in section 3, Requirements. Generally, the presentation/format and categories of requirements for sections 1, 2, 4 and 5 will essentially remain the same for all types of specifications and statements of work.
- C. Sample Outlines. The following sample outlines are included in this chapter:
 - 1. Performance Specification. Two outlines are provided for this type of specification. A complex electronics specification and a simpler Naval Engineering specification. The differentiation between complex and simple samples being the amount of on-going and on-site quality assurance inspection and verification.
 - 2. Design Specification.
 - 3. Purchase Description (Brand Name or Equal).
 - 4. Statement of Work.

OUTLINE FOR A PERFORMANCE SPECIFICATION (COMPLEX)

1. SCOPE

1.1 Purpose. A brief description of what type equipment is desired and under what conditions it is to be used.

1.2 Equipment. Define anticipated equipment configuration to be delivered. For example:

- a. Transmitter Receiver Unit.
- b. Remote Control Console.
- c. Control Cable, 50 ft w/connectors.

1.3 Documentation. Listing of all documentation to be furnished by the contractor. For example:

- a. Engineering drawings.
- b. Instruction book.
- c. Provisioning technical documentation.
- d. Test plans.
- e. Test reports.

1.4 Government furnished property.

1.5 Precedence.

2. APPLICABLE DOCUMENTS

2.1 Applicability. (In the following order.)

2.1.1 Government documents. (In the following order.)

2.1.1.1 Federal specifications.

2.1.1.2 Military specifications.

2.1.1.3 Federal standards.

2.1.1.4 Military standards.

2.1.2 Non-Government documents.

2.2 Drawings.

2.3 Source of documents. (See Chapter 5 for list of addresses.)

Complex Performance (cont'd)

3. REQUIREMENTS

3.1 General. A brief paragraph should be included to introduce and summarize what is to be designed and manufactured.

3.2 First article inspection. A statement that first article inspection will be required prior to production authorization is to be included.

3.3 Design and construction. Include various paragraphs concerning the physical design and construction of the equipment. May include such items as:

- Weight
- Dimensions
- Interconnecting cables
- Mounting
- Cooling
- Enclosure
- Corrosion requirements
- Fungus protection
- Finish, color
- Operation controls and adjustment
- Solid state design
- Modular design and fabrication
- Printed circuit boards and coatings
- Details of parts selection
- Parts mounting
- Edge connectors
- Test point locations
- Component/subassembly labeling

Design and construction details should be limited to only the characteristics absolutely necessary to meet operational requirements. This section is frequently overdone by the writer in a performance specification.

3.4 Reliability.

3.5 Maintainability. State the maintainability requirement.

- Maintenance philosophy
- Fault detection and isolation
- Instructions
- Internal Controls
- Special tools
- Test equipment
- Equipment spare parts
- Interchangeability

Complex Performance (cont'd)

3.6 Electrical performance. Various subparagraphs concerning the performance requirements needed to satisfy the operational commitments. These paragraphs may include areas similar to the following:

- Output frequency
- Output power
- Sensitivity
- Selectivity
- Intermodulation distortion
- Electromagnetic interference
- Speed of operation (settle time, squelch response time)
- Primary power
- Transient voltage
- Transient frequency
- Accuracy
- VSWR
- Built In Test Equipment (BITE)

3.7 Environmental requirements. Indicate the anticipated environmental requirements based on operational requirements such as:

- Temperature
- Shock
- Humidity
- Pressure
- Vibration
- Immersion

3.8 Documentation.

3.8.1 Nomenclature.

3.8.1.1 Nameplates.

3.8.2 Reprocurement data package.

3.8.3 Description sheets.

3.8.4 Technical manual.

3.8.5 Training.

3.8.5.1 Training plan.

3.8.6 Provisioning technical documentation.

3.8.7 Depot level technical documentation.

3.8.8 Configuration management. See MIL-STD-480.

Complex Performance (cont'd)

3.9 Workmanship.

3.10 Burn-in.

3.11 Reports.

4. QUALITY ASSURANCE PROVISIONS

4.1 General.

4.1.1 Records.

4.1.2 Contractors calibration system.

4.1.3 Responsibility for inspection.

4.1.4.1 Test plan requirements.

4.1.4.2 History data sheets.

4.1.4.3 Distribution.

4.1.5 Resident Coast Guard Inspector.

4.2 Inspection.

a. First Article (see 4.3).

1. In-plant Test.
2. Field Test.

b. Reliability qualification (see 4.4).

c. Quality conformance (see 4.5).

1. Production.
2. Production control.
3. Environmental.
4. Reliability production acceptance.
5. Maintainability.

d. Packaging inspection (see 4.6).

4.2.1 Failure responsibility.

4.3 First article inspection. Includes implant and field testing.

4.3.1 Contractor responsibilities.

4.3.2 Government responsibilities.

Complex Performance (cont'd)

4.3.3 Incoming part test.

4.3.4 Visual inspection.

4.3.5 In-plant test.

4.3.6 Field test.

4.3.6.1 Procedures.

4.3.6.2 Test report.

4.3.7 First article approval.

4.4 Reliability qualification.

4.4.1 Test plan/procedures.

4.4.2 Reports.

4.4.3 Failure rate prediction. Although the practice is not recommended, prediction may be used in lieu of actual testing.

4.5 Quality conformance inspection.

4.5.1 Inspection methods.

4.5.1.1 Defect classification.

4.5.1.2 Failure criteria.

4.5.1.2.1 Major.

4.5.1.2.2 Minor.

4.5.1.3 Failure responsibilities.

4.5.1.3.1 Government responsibilities.

4.5.1.3.2 Contractor responsibilities.

4.5.1.4 Disposition of life-tested article.

4.5.2 Production inspection.

4.5.2.1 Sampling procedures.

4.5.2.2 Test plan/procedures.

4.5.3 Production control inspection.

Complex Performance (cont'd)

4.5.3.1 Sampling procedures.

4.5.3.2 Test plan/procedures.

4.5.4 Environmental inspection.

4.5.4.1 Sampling procedures.

4.5.4.2 Test plan/procedures.

4.5.5 Reliability production acceptance.

4.5.5.1 Test plan/procedures.

4.5.5.2 Reports.

4.5.6 Maintainability.

4.5.6.1 Test plans/procedures.

4.5.6.2 Report.

4.6 Packaging inspection.

4.6.1 Descriptive details and plans.

4.6.2 First article inspection.

4.6.3 Quality conformance inspection.

4.7 Documentation.

5. PREPARATION FOR DELIVERY

5.1 Preservation-packaging-packing.

5.2 Marking.

5.3 Material inspection and receiving report (DD-250).

6. NOTES

6.1 Addressing of correspondence.

6.2 Definitions.

6.3 Ordering data.

6.4 Special instructions.

OUTLINE FOR A PERFORMANCE SPECIFICATION (SIMPLE)

1. SCOPE

1.1 Purpose. A brief description of what type equipment is desired and under what conditions it is to be used.

1.2 Equipment. Define anticipated equipment configuration to be delivered. For example:

- a. Diesel generator shipset.
- b. Start-up kit.
- c. Special tools.

1.3 Documentation. Listing of all documentation to be furnished by the contractor. For example:

- a. Engineering drawings.
- b. Instruction book.
- c. Provisioning technical documentation.
- d. Test plans.
- e. Test reports.

1.4 Government furnished property.

1.5 Precedence.

2. APPLICABLE DOCUMENTS

2.1 Applicability. (In the following order.)

2.1.1 Government documents. (In the following order.)

2.1.1.1 Federal specifications.

2.1.1.2 Military specifications.

2.1.1.3 Federal standards.

2.1.1.4 Military standards.

2.1.2 Non-Government documents.

2.2 Drawings.

2.3 Source of documents. (See Chapter 5 for list of addresses.)

Simple Performance (cont'd)

3. REQUIREMENTS

3.1 General. A brief paragraph should be included to introduce and summarize what is to be designed and manufactured.

3.1.1 First article inspection.

3.1.2 First article approval.

3.1.3 Submittals.

3.1.4 Certification.

3.2 Shipset operations.

3.2.1 Normal operation.

3.2.2 Parallel operation.

3.2.2 Shore power operation.

3.2.4 Environmental.

Ambient air temperature
Relative humidity
Sea water inlet temperature
Exhaust back pressure
Vibration
Ship motion

Static
Steady trim
Steady heel
Dynamic
Pitching
Rolling

3.3 Diesel generator

Limiting dimensions

Length
Width
Height
Weight - dry/wet

Assembly
Mounting
Isolation mounts
Starting panel
Safety

Simple Performance (cont'd)

3.4 Engine.

- Governor
- Jacket cooling system
 - Corrosion protection
 - Heaters
- Fuel oil system
 - Pumps
 - Injection system
 - Fuel oil lines
 - Fuel block
 - Fuel oil filter/separator
- Lube oil system
 - Cooling
 - Pump
 - Filter
- Inlet air system
- Exhaust system
- Alarm/shutdown contactors
 - Low lube oil pressure
 - High water temperature
- Stater system
- Nameplate

3.5 Generator.

- Excitation system
- Voltage regulator system
 - Automatic operation
 - Manual operation
- Heaters

3.6 Control panel.

- Circuit breakers
- Various meters
- Selector switches
 - Reverse power relay
- Governor control
- Indicator lights
- Fuses
- Phase rotation switch
- Limiting dimensions
- Metering
- Knobs
- Indicators
- Alarm system

3.7 Remote alarm panel.

Simple Performance (cont'd)

3.8 Special tools.

3.9 Performance characteristics.

- Starting
- Steady state voltage regulation
 - Waveform
 - Voltage transient recovery
 - Voltage spike
- Steady state frequency (speed) regulation
 - Speed transient recovery
- Vibration
- Shutdown
- Parallel operation
- Control
- Electromagnetic interference (EMI)

3.10 Materials and components.

- Electrical
 - Wiring
 - Bus
 - Terminal blocks
 - Connection boxes
 - Interconnecting cables
 - Marking
 - Galvanic protection

3.11 General workmanship.

- Mounting of parts
- Mounted hardware installation
- Cleaning
- Threaded parts or devices
- Tightness
- Riveting
- Chafing
- Gear assemblies
- Wiring
 - Lacing
 - Shielding
- Welding

3.12 Surface preparation and painting.

- Unpainted surfaces
- Painted surfaces

3.13 Documentation.

Simple Performance (cont'd)

3.14 Engineering drawings.

- Types
- Contents
- Preliminary drawings
- Final drawings
- Reproducible drawings

3.15 Instruction book.

- Copyrights
- Arrangement of contents
- Forward
- Table of contents
- Introduction
- Safety precautions
- Installation
- Operation
- Preventive maintenance
- Corrective maintenance
- Supplemental data
- Parts lists
- Illustrations and drawings
- Printing
- Page size
- Bounding
- Technical publication number
- Preliminary instruction book
- Final instruction book

3.16 Spare parts lists.

- Onboard spares list
- Start-up kit list

3.17 Provisioning technical documentation (PTD).

4. QUALITY ASSURANCE PROVISIONS

4.1 General.

4.1.1 Records.

4.1.2 Contractor's calibration system.

4.1.3 Responsibility for inspection.

4.1.4 Test plan.

4.1.5 History data.

Simple Performance (cont'd)

4.2 Inspections.

4.2.1 Failure responsibility.

4.2.2 Visual.

4.2.3 First article.

4.2.4 Production.

4.3 Documentation.

4.3.1 Approval and acceptance.

5. PREPARATION FOR DELIVERY.

5.1 General.

5.2 Preservation and packaging.

5.2.1 Diesel generator.

5.2.2 Other shipset components.

5.3 Packing.

5.4 Additional instruction books.

5.5 Drawings.

5.6 Marking.

5.7 Material Inspection and Receiving Report (Form DD-250)

6. NOTES

6.1 Definitions.

OUTLINE FOR A DESIGN SPECIFICATION

1. SCOPE

1.1 Purpose. A brief description of what type equipment is desired and under what conditions it is to be used.

1.2 Equipment. Define anticipated equipment configuration to be delivered.

1.3 Documentation. Listing of all documentation to be furnished by the contractor.

1.4 Government furnished property.

1.5 Precedence.

2. APPLICABLE DOCUMENTS

2.1 Applicability. (In the following order.)

2.1.1 Government documents. (In the following order.)

2.1.1.1 Federal specifications.

2.1.1.2 Military specifications.

2.1.1.3 Federal standards.

2.1.1.4 Military standards.

2.1.2 Non-Government documents.

2.2 Drawings.

2.3 Source of documents. (See Chapter 5 for list of addresses.)

3. REQUIREMENTS

3.1 General. A brief paragraph should be included to introduce and summarize what is to be designed and manufactured.

3.2 Construction.

3.2.1 Workmanship.

3.2.2 Chassis/mainframe.

Design (cont'd)

3.2.3 Modules.

3.3 Spare modules and spare parts.

3.4 Nomenclature.

3.5 Identification plate. (With approval and serial numbers to be assigned)

3.6 Electrical. (To include required levels with limits and waveforms as may be required.)

3.7 Configuration management.

3.8 Burn-in. (Requirements on chassis/mainframe with modules, including all spare modules, to include the duration of burn-in and method to be used.)

4. QUALITY ASSURANCE PROVISIONS

4.1 General.

4.1.1 Records.

4.1.2 Contractor's calibration system.

4.1.3 Responsibility for inspection.

4.1.4 Test plans.

4.1.5 Resident Coast Guard Inspector.

4.2 Inspection.

4.2.1 Failure responsibility.

4.2.2 Visual inspection.

4.2.3 Quality conformance inspection.

4.2.4 Testing.

4.2.4.1 Module testing (GFE test fixtures). (Include spare with GFE test fixtures, according to test procedure provided as an appendix to the specification.)

4.2.4.2 Module testing (Contractor test facilities). (Including spares, of commercially bought assemblies, to demonstrate required performance.)

Design (cont'd)

4.2.3 Failure criteria.

5. PREPARATION FOR DELIVERY

5.1 Preservation-packaging-packing.

5.2 Material Inspection and Receiving Report (Form DD-250).

6. NOTES

6.1 Addressing of correspondence.

6.2 Definitions.

6.3 Ordering data.

6.4 Special instructions.

APPENDICES:

- A. Listing of Spare Parts, Modules, Sets, etc.
- B. Test Procedures for Modules, Chassis, Equipment, etc.
- C. Drawing Package.

OUTLINE FOR A PURCHASE DESCRIPTION

1. SCOPE

1.1 General. This purchase description should identify the equipment by the brand-name, model number and manufacturer.

1.2 Equipment. Define the exact equipment configuration to be delivered.

1.3 Documentation. List all documentation to be furnished by the contractor.

1.4 Precedence.

2. APPLICABLE DOCUMENTS

(The only documents to be listed are those known to be applicable to the equipment. If unsure of the applicability, do not list the document and consider a performance type specification instead where the documentation can be listed.)

2.1 Applicability. (In the following order.)

2.1.1 Government documents. (In the following order.)

2.1.1.1 Federal specifications.

2.1.1.2 Military specifications.

2.1.1.3 Federal standards.

2.1.1.4 Military standards.

2.1.2 Non-Government documents.

2.2 Source of documents. (See Chapter 5 for list of addresses.)

3. REQUIREMENTS

3.1 General. State "brandname" or equal having the below salient characteristics.

NOTE: The brand-name must be able, without modification, to meet 3.2 in its entirety. Be aware that brand-name specification sheets stating, "designed to meet....." does not guarantee that the item passed a test to that level.

Purchase Description (cont'd)

3.2 Salient characteristics. List only those characteristics that are necessary. (i.e., do not list color of brand name if it is not important).

3.2.1 Design and construction.

Weight	Dimensions
Interconnecting cables	Mounting
Cooling	Enclosure
Corrosion requirements	Fungus protection
Color	Finish
Operation controls and adjustments	Solid state design
Modular design and fabrication	Display
Bonding	Printed circuit
Parts mounting	Edge connectors
Test Point Locations	Labeling

3.2.2 Reliability.

3.2.3 Maintainability.

3.2.4 Electrical performance.

- Output frequency
- Output power
- Sensitivity
- Selectivity
- Intermodulation distortion
- Electromagnetic interference
- Speed of operation (settle time, squelch response time)
- Primary power
- Transient voltage
- Transient frequency
- Accuracy
- Standing wave ratio
- Built-In Test Equipment (BITE)

3.2.5 Environmental requirement. Indicate the anticipated environmental requirements based on operational needs and those characteristics definitely known to be designed for the brand name such as:

- Temperature
- Humidity
- Vibration
- Shock
- Pressure
- Immersion
- Corrosion Resistance (salt spray)

Purchase Description (cont'd)

3.3 Documentation.

3.3.1 Description sheets.

3.3.2 Technical manual.

3.3.3 Provisioning technical documentation.

3.4 Workmanship.

3.5 Burn-in of equipment.

4. QUALITY ASSURANCE PROVISIONS

4.1 General.

4.1.1 Records.

4.1.2 Contractor's calibration system.

4.1.3 Responsibility for inspection.

4.1.4 Inspection plan.

4.1.5 Resident Coast Guard Inspector.

4.2 Classification of inspection

a. Full compliance (see 4.3).

1. In-plant test.
2. Field test.

b. Reliability qualification (see 4.4).

c. Quality conformance (see 4.5).

1. Production.
2. Production control.
3. Environmental.
4. Reliability production acceptance.
5. Maintainability.

d. Packaging inspection (see 4.6).

Purchase Description (cont'd)

4.3 Full compliance inspection. Includes implant and field testing.

4.3.1 Test plan.

4.3.1.1 Procedures.

4.3.1.2 Test report.

4.3.2 Field test.

4.3.1 Contractor responsibilities.

4.3.2 Government responsibilities.

4.3.2.3 Pass/fail criteria.

4.4 Reliability qualification.

4.4.1 Test plan/procedures.

4.4.2 Reports.

4.4.3 Failure rate prediction. Usually not required.

4.5 Quality conformance inspection.

4.5.1 Inspection methods.

4.5.1.1 Defect classification.

4.5.1.2 Failure criteria.

4.5.1.2.1 Major.

4.5.1.2.2 Minor.

4.5.1.3 Failure responsibilities.

4.5.1.3.1 Government responsibilities.

4.5.1.3.2 Contractor responsibilities.

4.5.1.4 Disposition of life-tested article.

4.5.2 Production inspection.

Purchase Description (cont'd)

4.5.2.1 Sampling procedures.

4.5.2.2 Test plan/procedures.

4.5.3 Production control inspection.

4.5.3.1 Sampling procedures.

4.5.3.2 Test plan/procedures.

4.5.4 Environmental inspection.

4.5.4.1 Sampling procedures.

4.5.4.2 Test plan/procedures.

4.5.5 Reliability production acceptance.

4.5.5.1 Test plan/procedures.

4.5.2.2 Reports.

4.5.6 Maintainability.

4.5.6.1 Test plans/procedures.

4.5.6.2 Report.

4.6 Packaging inspection.

4.6.1 Descriptive details and plans.

4.6.2 First article packaging inspection.

4.6.3 Quality conformance inspection.

5. PREPARATION FOR DELIVERY

5.1 Preservation-packaging-packing.

5.2 Marking.

5.3 Material inspection and receiving report (DD-250).

Purchase Description (cont'd)

6. NOTES

6.1 Addressing of correspondence.

6.2 Definitions.

6.3 Ordering data.

6.4 Special instructions.

OUTLINE FOR A STATEMENT OF WORK

NOTE: Statements of work (SOWs) are prepared when the Contractor is required to perform some services. SOWs may reference equipment specifications as enclosures (i.e., perform certain studies and provide test equipment specifications). The format of an SOW is basically the same as a specification, except that description of functions to be performed relate to tasks rather than equipment.

1. SCOPE. Describe the general overview of the entire statement of work.

1.1 Major tasks. Describe the specific tasks which the contractor will be required to perform. After each task, reference the paragraph in section 3 which will provide detailed guidance or requirements. Include any documentation such as progress reports which is required as an individual task.

1.2 Documentation.

1.3 Precedence.

2. APPLICABLE DOCUMENTS. List all known documents and reference material that the contractor will require in order to accomplish the tasks.

3. REQUIREMENTS. In this section, the specifics of all tasks should be provided to the greatest detail possible. Limits of effort or material must be specified.

4. QUALITY ASSURANCE PROVISIONS. Details of how each task will be received and accepted should be shown in Section 4. Include any contractor responsibility for specific testing.

5. PREPARATION FOR DELIVERY. Indicate exactly how any hardware or documentation is to be preserved, packaged and packed.



CHAPTER 12. PROGRAM EVALUATION AND REVIEW TECHNIQUES CHART

- A. Introduction. A Program Evaluation and Review Techniques (PERT) Chart is a type of contract flow chart which is a very useful tool in determining the schedule necessary to comply with the specifications requirements. Additionally, PERT charts are useful in discovering any conflicts between the time required to perform the specification's requirements and the contract delivery schedule.
- B. General. PERT chart networks should be developed utilizing the following guidelines.
1. Identify the events (objectives or milestones).
 2. Organize the events.
 3. Define and list the events and activities (tasks or work effort required).
 4. Obtain or estimate the elapsed time required to perform the activity.
 5. These may be obtained from the following.
 - a. Schedule.
 - b. Basic Specification/Purchase Description or military standard or specification.
 - c. Experience.
 6. Construct the network.
 7. Analyze the network for unrealistic network paths and for estimated "due" dates.
- C. Sample PERT Charts. The PERT charts depicted on the following figures show the idealized progress of a contract from award to completion. All items are set in time order proceeding from top to bottom of each page, however, the time is not proportional.
1. (II-12-1). OMITTED.
 2. (II-12-2) First Article Approval. The thermal survey may or may not be covered by the reliability test plan. However, the test plan should be approved prior to the start of the thermal survey. Other items apply as required by the specification.
 3. (II-12-3) Production Approval.

- 12-C-4. (II-12-4) Provisioning Technical Documentation. It may not be possible to have spares delivered prior to or in conjunction with production units. In this case, interim spare parts kits may be delivered with production units for use until spares are received.
5. (II-12-5) Training.
6. (II-12-6) Preservation/Packaging/Packing.
7. (II-12-7) Nomenclature Assignment.
8. (II-12-8) Software. Description sheets do not apply in all cases. Technical manuals are usually not completed in time for delivery with production units and a preliminary tech manual for delivery with production units may be desirable for interim use.

D. Glossary of Symbols.

a = Optimistic Time Estimate
b = Pessimistic Time Estimate
m = Most Likely Time Estimate
te = Expected Elapsed Time
TE = Earliest Expected Date
TL = Latest Allowable Date
TS = Scheduled Completion Date
T = Standard Deviation of an Activity

E. Glossary of Terms.

ACTIVITY. A work effort of a program which is presented by an arrow. An activity cannot be started until the event preceding it has occurred and it may represent a process, task, procurement cycle, waiting time, or simply represent a connection or interdependency between two events on the network.

BEGINNING EVENT. An event which signifies the beginning of one or more activities on a network.

CRITICAL PATH. That particular sequence of events and activities on the network path that has the greatest negative, or least positive, algebraic slack; that is, the most time-consuming path through the network.

EARLIEST EXPECTED DATE (TE). The earliest calendar date on which an event can be expected to occur. The TE value for a given event is equal to the sum of the expected elapsed times (te) for the activities on the longest path from the beginning of the program to the given event.

ENDING EVENT (SUCCESSOR). The event which signifies the completion of one or more activities. The ending point in time of an activity.

EVENT. A specific, definable accomplishment in a program plan, recognizable at a particular instant in time. Events do not consume time or resources.

EXPECTED ELAPSED TIME (te). The elapsed time which an activity is estimated to require. The expected elapsed time is identical to a single time estimate for the work to be accomplished, or is derived from the calculation of a statistically weighted averaged time estimate, incorporating the optimistic (a), most likely (m), and pessimistic (b) estimates for the work to be accomplished:

$$\frac{a + 4m + b}{6} = te$$

INTERFACE EVENT. An event which signals the transfer of responsibility, end items, or information from one part of the plan to another. Examples of interface events are the receipt of an item (hardware, drawing, specifications) or the release of an engineering drawing to manufacturing.

LATEST ALLOWABLE DATE (TL). The latest calendar date on which an event can occur without delaying the completion of the program. The TL value for a given event is calculated by subtracting the sum of the expected elapsed time (te) for the activities on the longest path between the given event and the end event of the program from the latest date allowable for completing the program. TL for the end event in a program is equal to the direct date (TD) of the program. If a directed date is not specified, TL = TE for the end event.

MILESTONE. Milestones are synonymous with events in a network.

MOST LIKELY TIME ESTIMATE (m). The most realistic estimate of the time an activity might consume. This time would be expected to occur most often if the activity could be repeated numerous times under similar circumstances.

NETWORK. A flow diagram consisting of activities and events which must be accomplished to reach the program objectives, showing their logical and planned sequences of accomplishment, interdependencies, and interrelationships.

OPTOMISTIC TIME ESTIMATE (a). The time in which the activity can be completed if everything goes exceptionally well. It is estimated that an activity would have no more than one chance in one hundred of being completed within this time.

PESSIMISTIC TIME ESTIMATE (b). An estimate of the longest an activity would require under the most adverse conditions, barring "acts of God."

PROBABILITY (P). A statistical measure of the chance of an event occurring by its earliest expected date (TE). This probably is determined through the equation:

$$Z = \frac{TL - TE}{TE}$$

SCHEDULED COMPLETION DATE (TS). A date assigned for completion of an activity (accomplishment of an event) for purposes of planning and control.

SIMULATION. The planning and processing of alternative actions to determine the effect of such actions on the program concerned.

SLACK. The difference between the latest allowable date and the expected date (TL - TE.) Slack is a characteristic, as such, of the network paths. Slack may be positive, zero, or negative.

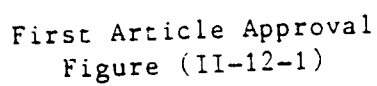
STANDARD DEVIATION OF AN ACTIVITY (j). A measure of variance about the expected elapsed time for an activity, calculated when using three-time estimates. It is computed from the formula (b-a)/6.

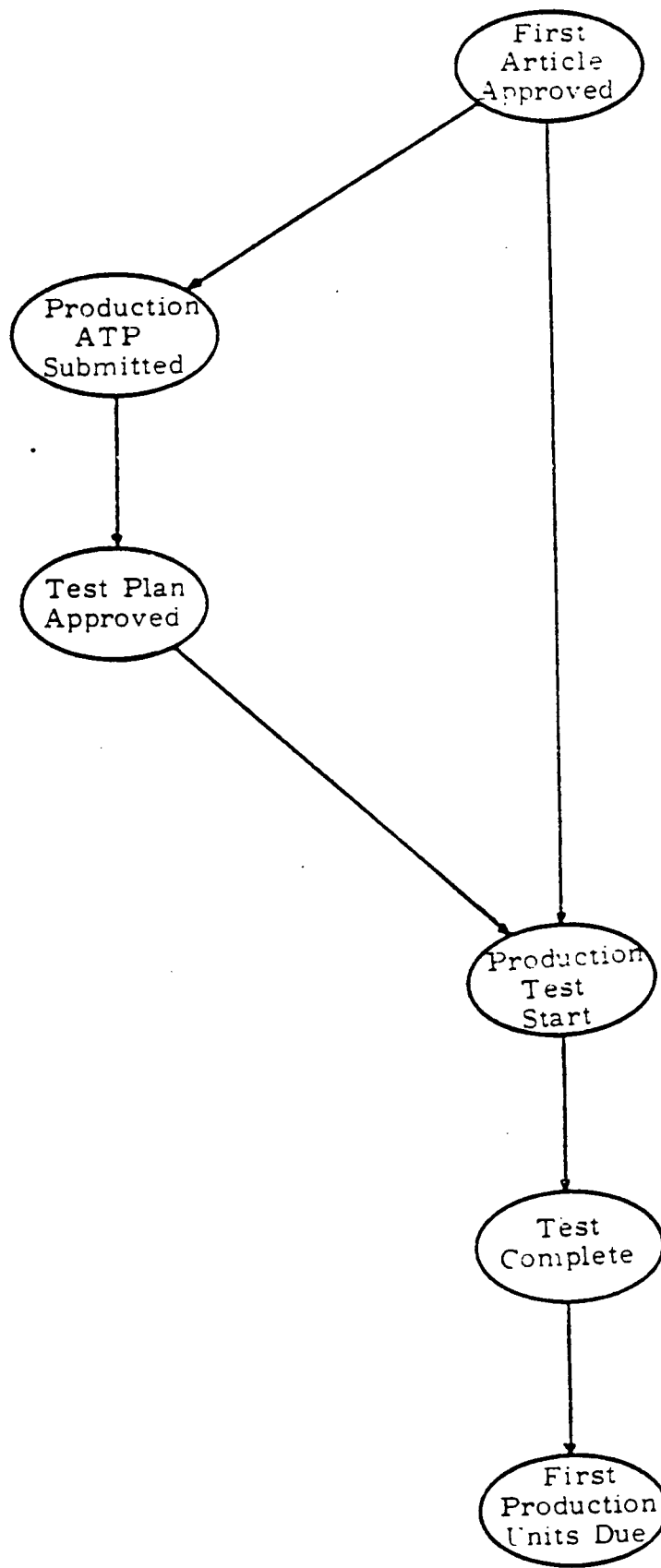
STANDARD DEVIATION OF AN EVENT. A measure of variance about the event expected date. It is calculated by computing the square root of the sum of the squares of activity standard deviation on the longest time path leading to the event under consideration.

WORK BREAKDOWN STRUCTURE. A family tree subdivision of a program, beginning with the end objectives and then subdividing these objectives into successively smaller end item subdivisions. The work breakdown structure establishes the framework for:

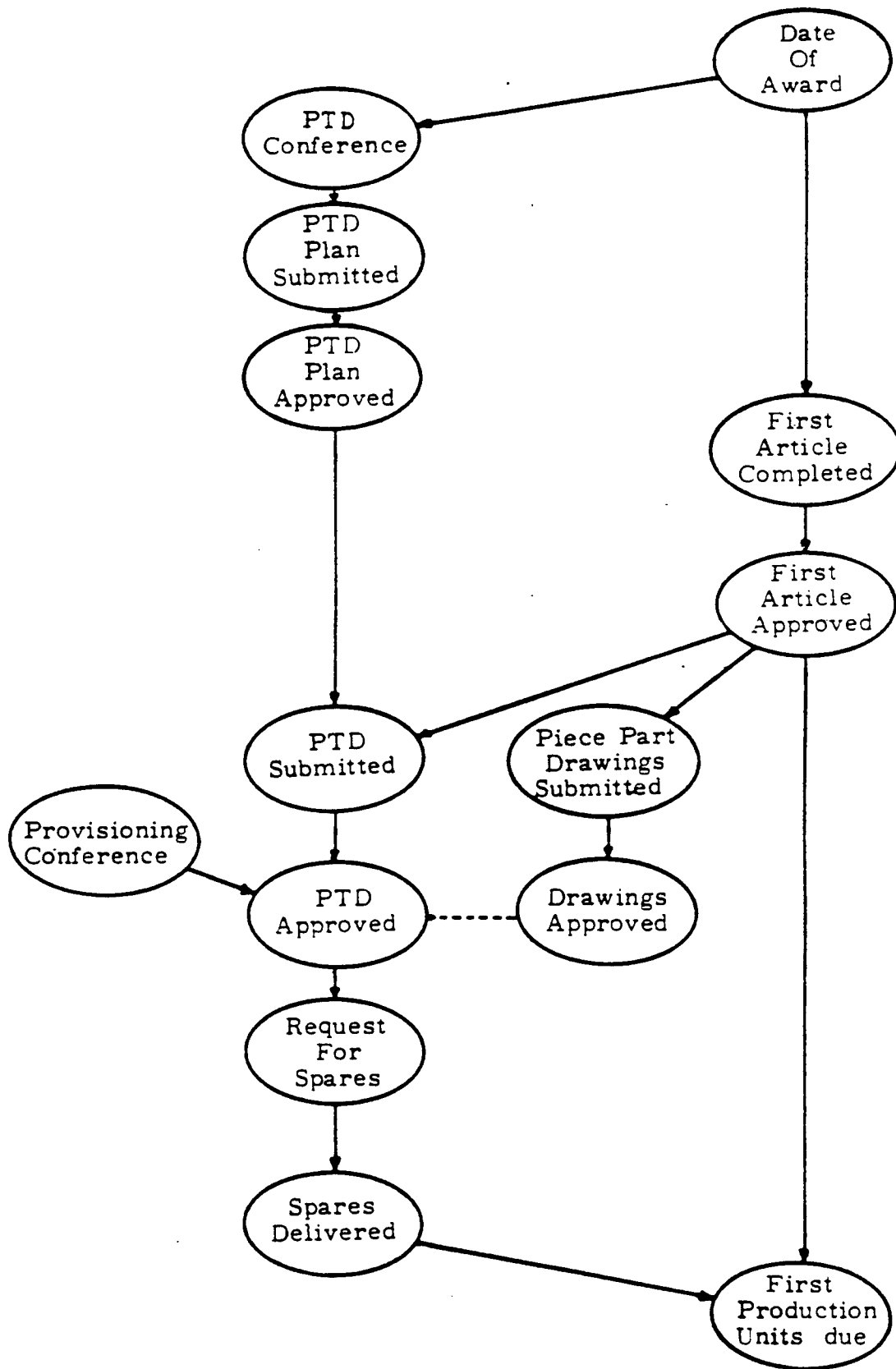
1. defining the work to be accomplished;
2. constructing a network plan;
3. summarizing the cost schedule status of program for progressively higher levels of management.

ZERO TIME ACTIVITY. An activity which constrains the beginning of a following activity or occurrence of the event to which it leads by requiring that the event from which it proceeds occurs first.

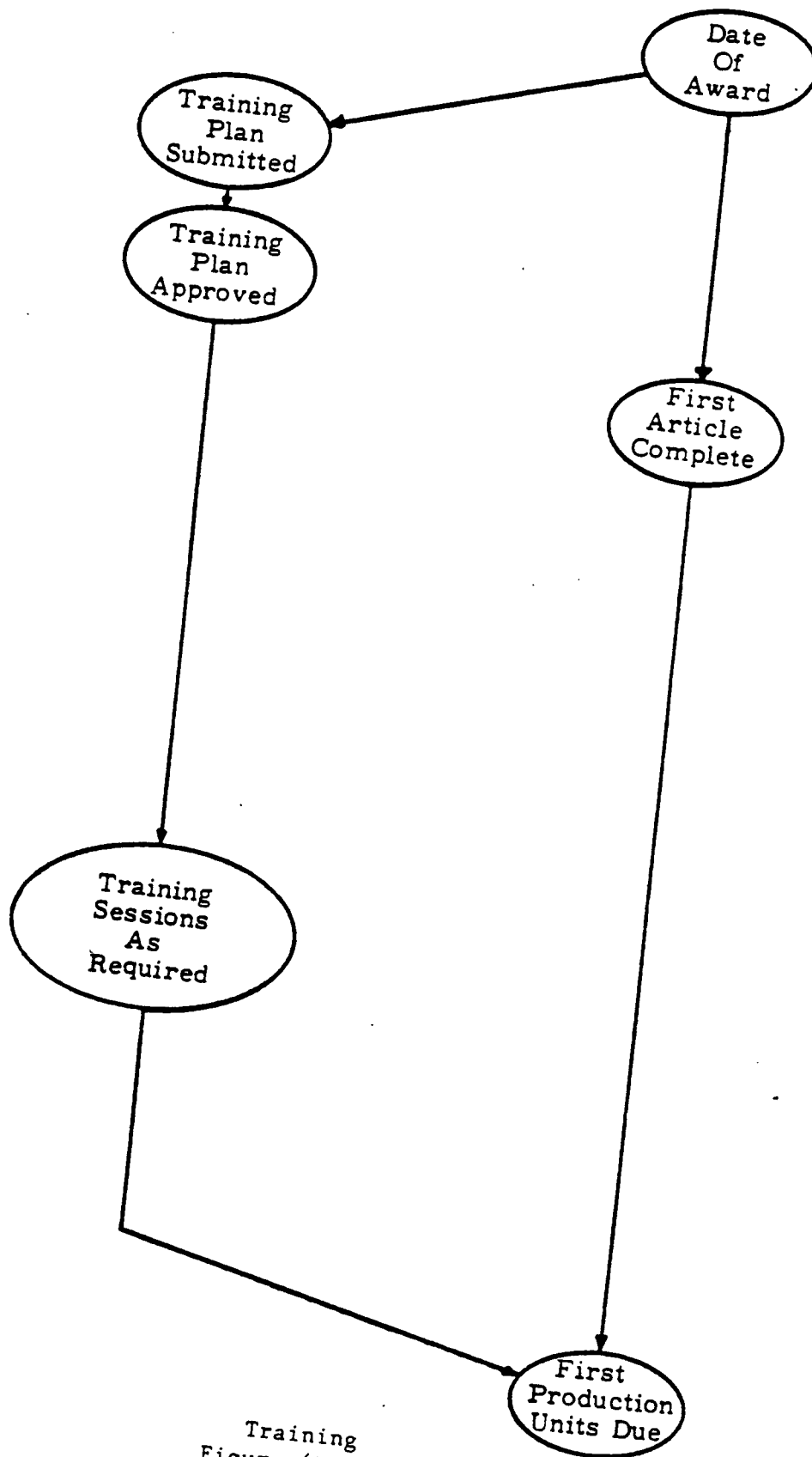




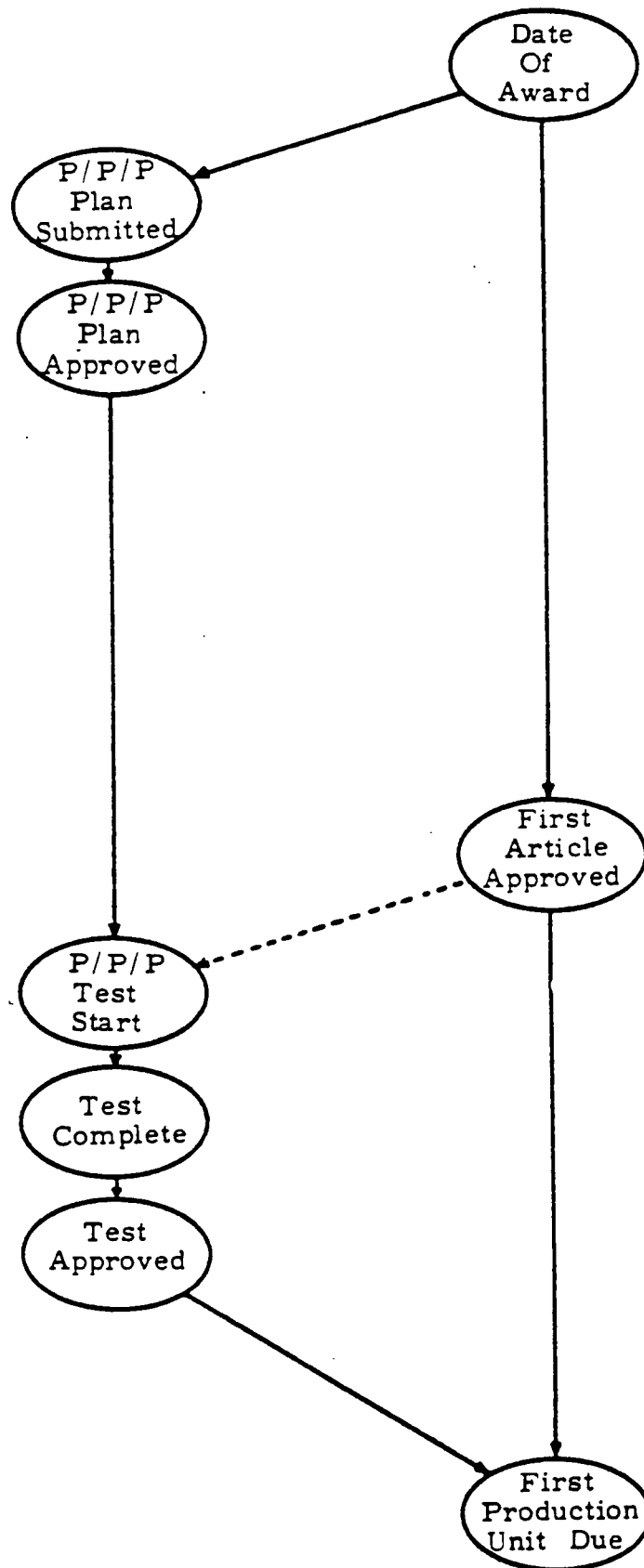
Production Approval
Figure (II-12-2)



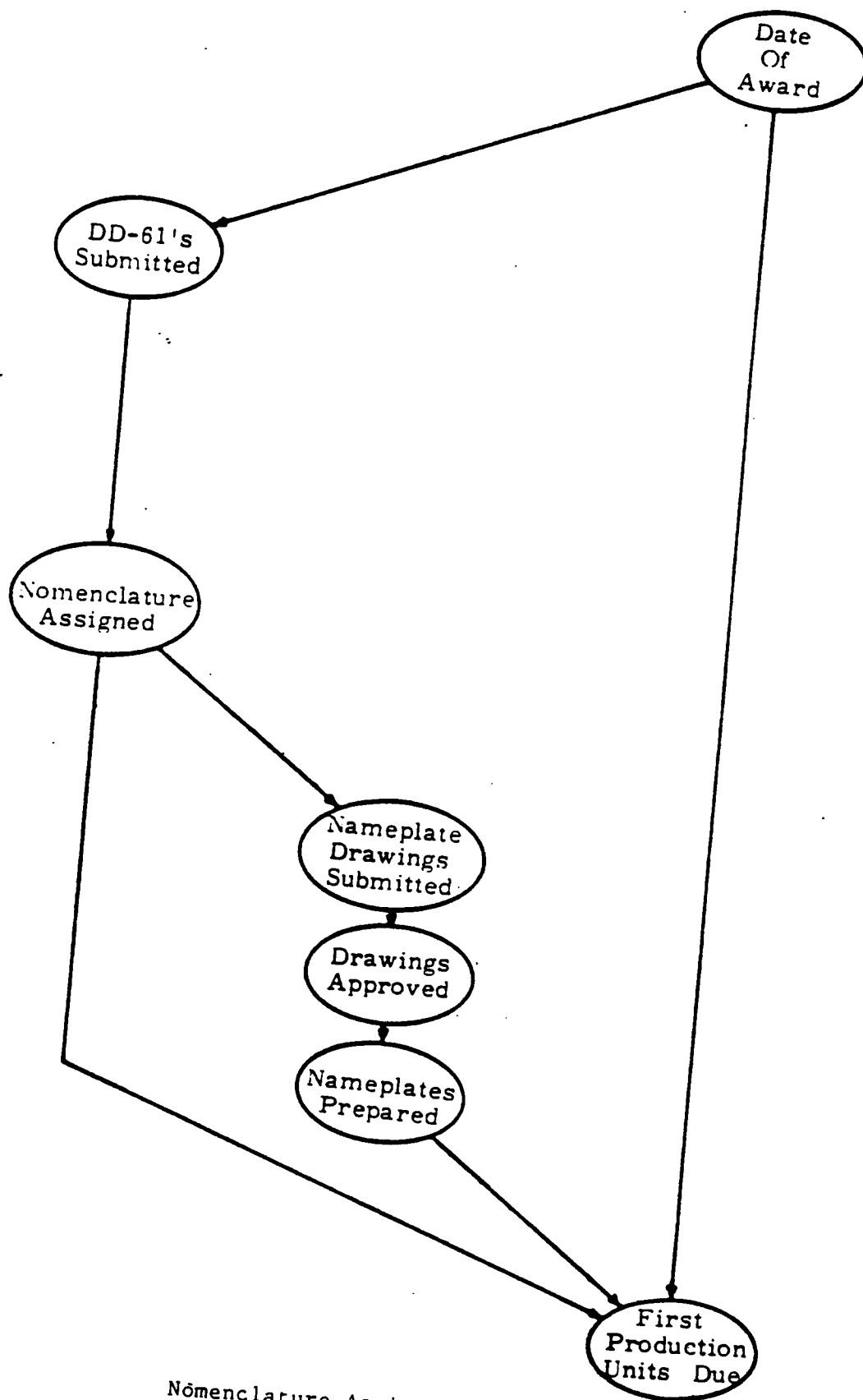
Provisioning Technical Documentation .
Figure (II-12-3)



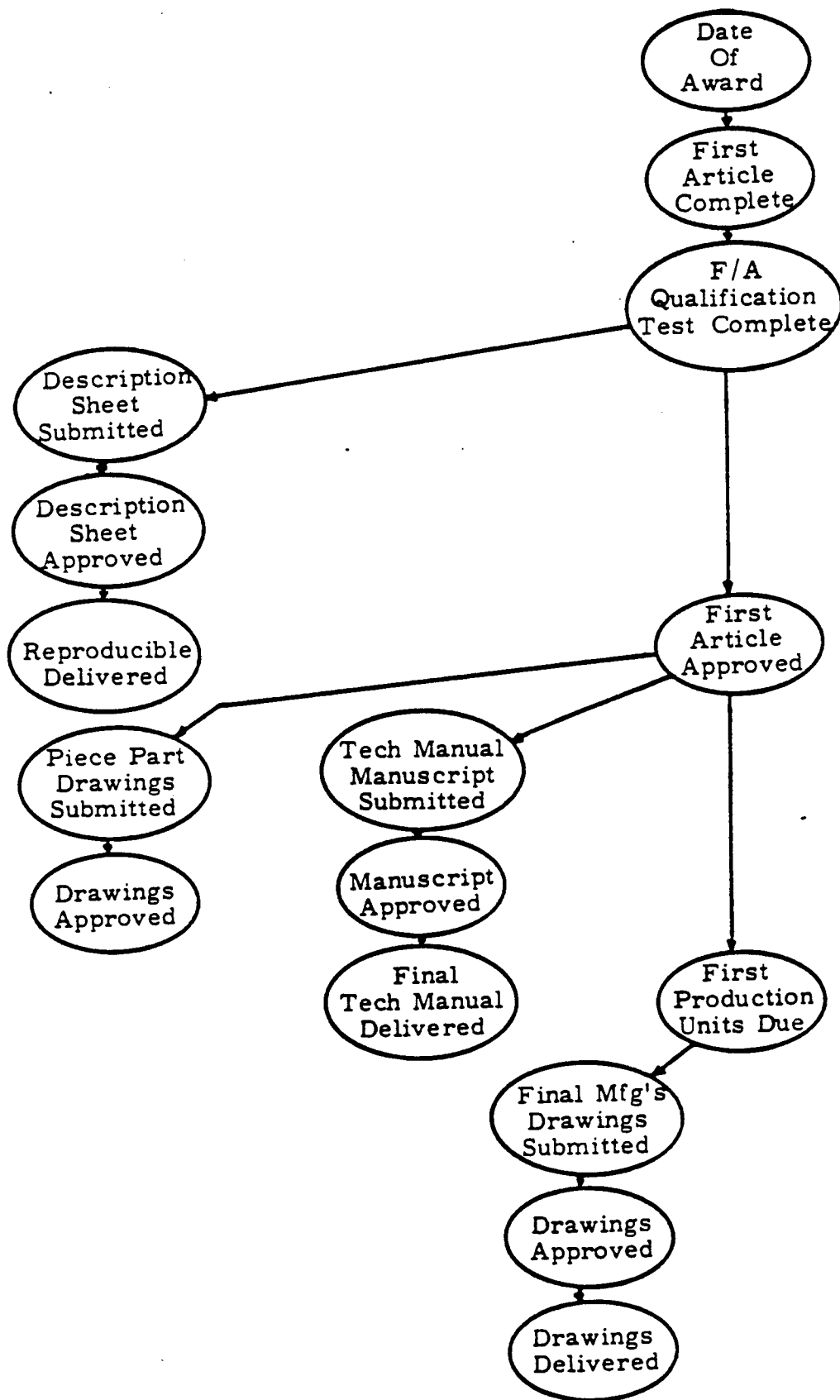
Training
Figure (II-12-4)



Preservation/Packaging/Packing
Figure (II-12-5)



Nomenclature Assignment
Figure (II-12-6)



Software
Figure (II-12-7)



COMPTROLLER MANUAL
VOLUME X (QUALITY ASSURANCE)
PART III
QUALITY ASSURANCE REPRESENTATIVE

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FORWARD

Subj: Comptroller Manual, Volume X, Part III, Quality Assurance Representative

1. PURPOSE. Part III provides policy and procedures to be utilized by personnel when designated a Coast Guard Quality Assurance Representative (QAR). Through the use of Part III and subsequent refinements, Coast Guard Quality Assurance Inspection will become more uniform and a standard high degree of performance will be achieved.
2. APPLICABILITY. The utilization of a QAR, and thus the policy and procedures herein, is applicable to certain supply contracts. Part III does not apply to construction contracts which are addressed in COMDINST M11000.1 series. Additionally, it does not apply to research and development contracts, ship repair contracts or to Resident Inspection Offices with an OPFAC number (generally major ship or aircraft procurements). However, RIOs may find Part III useful as a reference when the Contracting Officer's Technical Representatives (COTR) are performing quality assurance inspections.
3. DIRECTIVES AFFECTED. No directives are presently affected as this is the original publication of Part III.
4. ACTION. Contracting Officers shall review Part III and anticipated procurements to determine if the use of a QAR is appropriate. This Manual does not compel the use of a QAR but only provides the policy and procedures to be followed once it has been determined that the utilization of a QAR would be effective.
5. CHANGES. Changes to this Manual will be consecutively numbered and will include reprinted pages, when necessary. Comments and recommendations pertaining to this Manual Instruction shall be addressed to Commandant (G-FQA).

CHAPTER 1. INTRODUCTION

- A. General. Contracting officers representing the Coast Guard enter into contracts with contractors to provide the products and services necessary to meet the many Coast Guard needs. Consequently, the person in the field has the right to expect quality products and services to be delivered when they are needed and to fulfill the needs for which they were procured.
- B. Contract Goal. The goal of any contract is to provide the means for a successful procurement. A procurement is successful when a contractor profits from the timely delivery of quality products which meet the needs of the Coast Guard. To better insure a successful procurement, the contracting officer may utilize the services of a quality assurance representative (QAR). A QAR is any person who is designated in writing by the contracting officer to be a representative of the contracting officer.
- C. Quality. The term "quality," as it applies to Coast Guard quality assurance, is much misunderstood. The quality of a product is not, as is commonly thought, how well it was built or how long it will last. Quality is defined, quite simply, as "CONFORMANCE": conformance to the contract product or service specification requirements. Generally, the quality of the products or services procured by the Coast Guard reflects on how well the contract specification is written: poor spec, poor quality; good spec, good quality.
- D. Quality Assurance. Quality assurance is all those planned or systematic actions necessary to provide adequate confidence that products or services will satisfy given needs. To ensure this goal, it is imperative that quality is an integral part of the definition of those needs. In Coast Guard procurement, this means that quality assurance must be "built into" the contract specification requirements, not assumed to consist of only verification or inspection once the products or services are produced.
- E. Quality Assurance Inspection. The purpose of inspection by the Coast Guard is to assure that the products and services procured conform to the quality and quantity requirements of the contract. Inspection is the key to the Coast Guard's ability to enforce the quality provisions of a contract. Unless an inspection has been conducted, there can be no assurance that the products and services conform to the contract specification requirements. The QAR, as a quality assurance inspector, conducts quality assurance inspections before the Coast Guard's acceptance of the products and services for delivery.

1-F. Team Concept of Procurement. Coast Guard's procurement system utilizes the team concept in the administration of contracts. The team concept is a cohesive working relationship between the contracting officer, engineering and quality assurance, all of which actively participate throughout the life of the contract. Normally at the beginning of each procurement, the contracting officer, as team leader, will provide guidance to insure mutual expectations and reduce role conflicts among the members.

1. Objectives. The overall objective of the team concept is to better insure a successful procurement. The individual objective of each member simply stated is:

- a. The contracting officer - conformance with all contract requirements and proper administration of the procurement.
- b. Engineering - operational needs.
- c. Quality assurance - conformance with the contract specification requirements.

2. Communication. The foundation of the team concept is improved communications between all members. This is accomplished by each member having a basic understanding of the procedures allowed each other member in the pursuit of their individual objectives. With this knowledge, each member will better understand both the positions taken by the other members and the correct meaning of what is said or written by each of the members.

G. Quality Assurance Representative. As the procurement's team member representing quality assurance, the QAR provides a continuing evaluation of the adequacy and effectiveness of the contract specification requirements, as they apply to both the Contractor and the Coast Guard, with the responsibility to initiate an evaluation of contract performance and timely recommendations for corrective measures to the contracting officer. This requires the QAR's involvement in the early evaluation of the adequacy of the stated requirements and their quality assurance provisions (specification review/development); evaluation of the Contractor's understanding of and ability to perform under the contract requirements; monitoring of contract progress for compliance with specification requirements and delivery schedule; evaluation of the Contractor's performance; and the performing of quality assurance inspections for Coast Guard acceptance. Additionally, the QAR should remain aware of and evaluate a product's or service's ability to achieve its intended Coast Guard use. To these ends, the QAR will employ many established quality assurance techniques to insure and sustain a quality of products and services that will satisfy the Coast Guard's needs.

CHAPTER 2. THE QUALITY ASSURANCE REPRESENTATIVE

- A. Introduction. To better insure that products and services comply with both the contract specifications and delivery schedules, the contracting officer may utilize the services of a quality assurance representative (QAR).
- B. General. The QAR performs an essential service for the team concept of procurement utilized by the Coast Guard: quality assurance inspections toward expediting the contract specification requirements. The QAR's expertise is often utilized to develop and evaluate quality assurance programs. The QAR is often the on-site representative, the eyes and ears, of the Coast Guard. In all activities with the contractor, the QAR must remember that the contracting officer, and only the contracting officer, can in any way modify the contract specification requirements.
- C. Responsibility of the Quality Assurance Representative. The sole responsibility of the QAR is to that printed document, the contract. This is essential to the team concept. The contract specification requirements are the rules by which all members of the team must abide. There must be an unbiased, objective input of information if the team concept is to be successful. The QAR objectively appraises compliance to the contract specification requirements by the application of one overriding absolute rule: the contract specification requirements as written are either being complied with or not being complied with. There is no middle ground in the QAR's reporting on compliance. When specifically stated as such, the QAR's reporting may additionally include opinions, recommendations or any other comments felt pertinent to better enable the contracting officer to make contractual decisions.
- D. Quality Assurance Inspector. By Webster's definition, an inspector is a person who examines critically; especially in order to detect flaws, errors, etc. In Government contracting, a contractor is required to insure that products comply with the contract specification requirements. To accomplish this, the contractor establishes and performs quality assurance procedures. The cost of these quality assurance procedures is a part of the total cost paid to the contractor by the Government for the products. Since the contractor is being paid to assure the products for compliance, the QAR should perform inspections only as a quality assurance inspector. A quality assurance inspector inspects only the adequacy of the contractor's quality assurance procedures (not the product itself) to insure the products comply with the contract specification requirements. Most often verification of this adequacy can only be done by witnessing the contractor utilize the quality assurance procedures to inspect the products, and then reviewing the contractor's results.

2-E. Expeditor of Contract Specification Requirements. By Webster's definition, expediting is to help along, assist, facilitate. The QAR insures that all members of the team remain aware of their respective contractual specification requirements. The QAR monitors and evaluates the contractor's performance being alert to potential problem areas early on before they become a crisis. Expediting should not be construed in any way to mean administering the contract as this is a function of the contracting officer.

F. Role of the Quality Assurance Representative. Involvement in all of the procurement functions is necessary for the QAR to successfully perform the roles of both expeditor and quality assurance inspector. The following is only a brief discussion of these functions. They are discussed in detail in later chapters.

1. Contract Review. The QAR must review the complete contract package both before and after award to the contractor for understanding, accuracy, realism, completeness and conflicts. Any problem areas must be reported to the contracting officer immediately.
2. Preaward Survey. A preaward survey is an evaluation of a prospective contractor's technical and financial capability to perform in accordance with the contract specification requirements. The QAR should be a member of the preaward survey team. This allows the QAR at the very earliest date to become familiar with the prospective contractor and to better anticipate any future problem areas.
3. Post Award Conference. Even though a preaward survey may have been conducted, after contract award a post award conference should always be held to determine if the contractor and the Coast Guard agree on what is required by the contract requirements. This conference differs from the preaward survey in that now the contractor is making firm material and manufacturing obligations to provide the required products. Prior to contract award all information learned from the contractor was based on anticipated obligations. This conference is between the contractor and representatives of Coast Guard contracting, engineering and quality assurance.
4. Contractor Initial Contact. If a post award conference is not held, the QAR should initiate, in coordination with the contracting officer, a contractor initial contact (CIC). The CIC is similar to a post award conference except that only the contract specification requirements are reviewed. Generally, contracting and engineering are not present, since this is not a formal post award conference.

- 2-F-5. Contractor Performance Evaluation. The QAR should continually monitor and evaluate the contractor's performance to better anticipate any delays in delivery or noncompliance with the contract requirements. It is imperative that performance evaluations are both accurate and objective as the contracting officer may use the evaluations as the basis for taking action on the contractor. Experience has shown that a pessimistic evaluation is far more accurate than an optimistic evaluation.
6. Quality Assurance Inspection and Acceptance. The QAR, as a quality assurance inspector, should conduct quality assurance inspections before the Coast Guard's acceptance of products for delivery.
7. Government Furnished Property (GFP). The QAR should insure that all GFP supplied to the contractor is both accurate and suitable for the purpose intended before the contractor is allowed to utilize the GFP.
8. Verification of Progress Payments. The QAR should be prepared to verify if the contractor's requests for progress payments submitted to the contracting officer are representative of materials actually purchased and work actually performed. The QAR should know the amount and whereabouts of materials within the contractor's facility that are Coast Guard-owned (due to their being purchased and manufactured with progress payment funds). The verification performed by the QAR is not a fiscal audit of the contractor.
- G. Selection of a Quality Assurance Representative. The originator of the contract specification requirements is inappropriate as the QAR. Although the originator will be very knowledgeable of the requirements, it is very important that someone entirely objective, not emotionally involved with the product or exposed to operational pressures to deliver the product be designated as a QAR. In addition, a QAR should be a creditable, knowledgeable, professional whose attributes are culminated in the ability to successfully verify conformance with the contract's specification requirements. Although this definition may seem philosophical, in reality, these are essential qualities. Remember, the QAR will be representing the Coast Guard in the business community.
1. Objectivity. The QAR is not the engineer or contracting officer and should guard against assuming any of their decision making roles. The QAR must remain independent of their roles in order to make accurate objective assessments of the contractor's performance. Objectivity can only be assured by maintaining this independence.

- 2-G-2. Credibility. The QAR must maintain a high degree of credibility to be effective. The QAR's spoken and written word both in dealing with the contractor and reporting to the contracting officer must always be accurate and objective as to the contractor's performance and compliance with the contract specification requirements.
3. Knowledge. The QAR must thoroughly understand all requirements of the contract, specification and any referenced documents listed in the specification and be familiar with basic contracting procedures. Additionally, the intended use of and performance of any previous procurements for the products and services should be known.
4. Professionalism. The actions of the QAR should be conducted in a professional business-like manner at all times. Often the QAR is the contractor's only personal contact with the Coast Guard. The QAR conducts business not only with the contractor's engineers and technicians but often with the management. The impressions preceived of the QAR may become the contractor's general impression of the Coast Guard as a whole. As a professional, the QAR should dress in appropriate business attire or military dress uniform, insure that personal habits convey only the utmost of courtesies and avoid contact with the contractor's employees after working hours. Becoming personally involved with the contractor's employees only diminishes the professionalism and effectiveness of the QAR and could create a negative impression on the contractor and the contracting officer.

CHAPTER 3. CONTRACT REVIEW

- A. Introduction. The contract is a formal agreement between the Coast Guard and civilian contractors. A properly written contract can save time and dollars. The contract specification requirements are the basic foundation for products and services being procured. The Government requires that all contract specification requirements be clear and concise and free of ambiguities and conflicts.
- B. General. The QAR's first step when assigned a contract is to review the complete contract package, as awarded to the contractor, for understanding, accuracy, realism, completeness and conflicts. Any problem areas should be reported to the contracting officer immediately.
- C. Reference Material. The documents listed below will aid the QAR in the review of the contract specification requirements:
1. COMMANDANT INSTRUCTION M4121.1, Specification Development Guide
 2. Defense Standardization Manual 4120.3
 3. MIL-STD-490, Specification Practices
 4. MIL-STD-961, Outline of Forms and Instructions for the Preparation of Specifications and Associated Documents
 5. MIL-STD-143, Standards and Specifications, Order of Precedence for the selection of
- D. Review Guidelines. While realizing that contract specification requirements vary in complexity and length and that the conduct of each contract review procedure must be tailored to the needs of the particular contract, the guidelines listed below are applicable to all contract reviews.
1. It is most important that the wording of the contract requirements cannot be misinterpreted by the contractor. If there is more than one possible interpretation, the contractor will naturally select the one most profitable. Therefore, the contract requirements' ability to accurately describe the needs of the Coast Guard shall be reviewed from the contractor's profit viewpoint.
 2. Carefully review the contract in order to determine if potential ambiguities exist. Early detection and correction of such ambiguities does materially assist in having a successful procurement, which is the goal of the QAR.

- 3-D-3. Specifications shall be reviewed in an objective manner. It is neither the function nor the purpose of the review to establish engineering requirements. This does not, however, restrict the questioning of the necessity (gold plating) or the feasibility (impossibility of performance) of an individual requirement or of a collective set of requirements.
4. If an error is discovered in the requirements, any corrective comments should always be objective and include a solution or alternative.
 5. Each contract requirement should be a brief, concise, understandable description of the needs of the Coast Guard. Usually, it is necessary to state a requirement only once. Redundancy seldom adds anything but words and the possibility of error.
 6. The contract specification requirements must be verifiable. If the contract does not contain some form of verification for conformance, the requirement should be deleted or modified. A requirement which cannot be verified is no requirement at all.
- E. Preliminary Review. The QAR should first determine whether the contract package is complete: basic contract, specification, Coast Guard drawings, etc. If the preliminary review indicates the review will be complex or reveals extensive problem areas, make an additional working copy of the requirements leaving the original clean for future use. After the preliminary review, review with the originator of the requirements what the contract is "really attempting to procure" and any problem areas revealed by the review. Determine the following concerning the history of the contract specification requirements:
1. Have the requirements been previously used for procurement? Was the procurement successful? Were any previous contract modifications incorporated into the new contract?
 2. Are the contract specification requirements written around a particular product? If so, will this unduly restrict competition?
- F. Basic Contract Review. The basic contract and its amendments and modifications should be the first contract documents reviewed. There are certain portions of the basic contract which could conflict, change, add or delete the requirements contained in the contract specification(s). Any problem areas discovered must be reported to the contracting officer. As a minimum, the following should be reviewed:

- 3-F-1. What items and quantities are being procured? This should be on, or begin on, the first page of any basic contract. Some contracts do not award all items to a single contractor, but rather divide the items between different contractors.
2. Does the contract have an order of precedence? This is required.
 3. Are all deliverables or submittals included in the delivery schedule?
 4. Are the inspection, acceptance and method of delivery requirements in accord; such as:
 - a. Inspection at origin and acceptance at destination for f.o.b. destination delivery?
 - b. Inspection and acceptance at origin for f.o.b. origin delivery?
 5. If delivery is f.o.b. origin, is the method for the Coast Guard to pay for the shipping charges stated; such as payment by Government Bill of Lading (GBL)?
 6. Is there a first article clause if a first article inspection is required by contract specification?
 7. If the contractor indicated the need for progress payments, was the progress payment clause included.
- G. Specification Review. All portions of the specification must be reviewed. The specification is the most valuable document used by the QAR. It should describe in detail the products and services being procured, and list the necessary requirements and parameters.
1. Is an order of precedence included? The boilerplate order of precedence does not define what documents in the specification take precedence; such as precedence between MIL-SPECs, drawings, GFP, etc.
 2. Is the ordering data for all MIL-SPECs and MIL-STDs included. The ordering data tailors the documents and specifies what options are applicable to the items being procured. This is a continuing problem area.
 3. Verify that all drawings are up to date and applicable to the products being procured. If possible, verify all drawings against a known good product.

3-G-4. Is the specification sufficiently specific to permit the QAR and the contractor to make a list of manpower resources and, if necessary, special facilities, equipment, subcontracts and consultants needed to accomplish the contract?

5. Is general information separated from direction so that background information, suggested procedures, etc., are clearly distinguishable from contractor responsibilities? Statements that do not directly contribute to the requirements are often ambiguous and confusing.

6. Are the end results and specific duties of the contractor stated in such a way that what is required is clearly known and will the QAR be able to determine if the contractor has complied?

7. What types of documentation is the contractor required to submit. All submittals should be submitted to the contracting officer for approval. These may include routine reports but also may include technical or scientific reports as an interim or end product of the contractual effort. Specifying the format of the report may help in the evaluation of contract compliance.

8. Is a time specified for the resubmittal of any documents determined to be unacceptable by the contracting officer?

H. Review Response. Most contract reviews result in the discovery of deficiencies which must be made known to the contracting officer immediately. A formal response should be made to the contracting officer. The response should be by memorandum or letter. The response should state if the contract specification requirements are suitable for procurement. Any applicable comments should be included as well as any pertinent details of the conduct of the review procedure. All comments should be either recommended changes and additions to the contract or questions concerning the applicability of a requirement. When comments are extensive, they should be an enclosure to the formal response. A small number of comments may be included on the formal response.

CHAPTER 4. PREAWARD SURVEY

- A. Introduction. A preaward survey is an evaluation of a prospective contractor's technical and financial capability to perform in accordance with the contract requirements.
- B. General. The QAR should be a member of the preaward survey team. This allows the QAR at the very earliest date to become familiar with the prospective contractor and to better anticipate any future problem areas. Primarily the QAR will be evaluating the contractor's quality assurance program but the QAR should be prepared to help any team member with the survey. The contracting officer will assign specific roles for the team members.
- C. Survey Guidelines. A guide for the overall on-site evaluation of a prospective contractor is provided in this chapter. The guidelines are intended to assist in developing the facts to be used in preparing the survey team's report. The information provided below should be used only as a guide, not as a rigid format or question/answer sheet.
 1. General Information.
 - a. Solicitation or proposal number or other identification.
 - b. Date(s) of evaluation.
 - c. Firm name, address, telephone number.
 - d. Name(s) and title(s) of the person(s) contacted in making the evaluation.
 - e. Name(s) and routing symbol(s) of evaluation team members.
 2. Organization.
 - a. List the names, titles, and citizenship of the principal company officials. Also list experience and background if resumes are not available.
 - b. Form of company: Corporation (parent/subsidiary affiliations), partnership, sole proprietorship? Date company was founded. If incorporated, in which state?
 - c. Name and relationship of parent company, if any.
 - d. Location of parent company.

4-C-2-e. Evaluate organization against the requirements of the solicitation; i.e., are there any conflicts of duties within or between organizational segments which may endanger contract performance; is the organization such that all facets of the contract will be controlled?

f. Does the prospective contractor have the necessary organization to satisfactorily perform the proposed work.

3. Experience.

- a. Is the product to be procured a standard product for the prospective contractor? If so, for how many years has the item been produced, and what is the quantity produced?
- b. Has the prospective contractor ever produced identical or similar products to those required on the solicitation for either Government or commercial purposes? If so, describe in detail giving dates produced, Government contract numbers, and quantities delivered.
- c. Has the prospective contractor performed previous contracts such that he is familiar with Government specifications in general or applicable specifications in particular?
- d. Do the prospective contractor's responsible officials question any of the contract end-item requirements or allege any misunderstanding of the contract end-item requirements?
- e. List the firm's present product, or obtain brochures listing same, and years of production experience with such products.
- f. Are the prospective contractor's purchasing personnel experienced in procuring materials, components, services and subcontracting to Government specifications?
- g. Does the prospective contractor have the necessary experience to satisfactorily perform the proposed contract?

4. Technical Qualifications.

- a. List the names and positions of the prospective contractor's key engineering, quality control, and all other technical personnel who will be involved with an award. Also list experience and educational background, include resumes if available.

b. Engineering Competence.

- (1) Do the prospective contractor's engineers fully understand all specification requirements of the solicitation?

4-C-4-b(2) What experience do the prospective contractor's engineers have with design, development and manufacturing of the products required by the solicitation?

- (3) Do the prospective contractor's engineers have the specialized engineering experience considered necessary to build the product required by the solicitation?
 - (4) How many engineers will be assigned to the proposed contract?
 - (5) Will the engineers who will be assigned to the proposed contract also be assigned to other projects?
 - (6) If the engineers will be assigned to other projects, at what time during the proposed contract will they actually commence work on the proposed contract?
 - (7) What percentage of each engineer's time will be devoted to the proposed contract?
 - (8) Does the prospective contractor propose to employ consultants to assist in any of the engineering or technical areas? If so, are the consultants available? (Give name, address, experience, and confirm that arrangements have been made for these services.)
 - (9) Does the prospective contractor have qualified technical writers and do they intend to write their own instruction books or other manuals required by the contract? Explain, equating the technical writer's experience with the specific requirements.
 - (10) If the prospective contractor intends to obtain outside technical writing services, are such services immediately available? (Give name, address, experience, and confirm that arrangements have been made for these services.)
- c. Summary of Technical Qualification. Do you find the prospective contractor's engineering, quality control and other technical staff competent to satisfactorily complete the proposed contract? Explain, equating the technical competency and experience to the specific item(s) required.

5. Quality Assurance.

- a. Does the prospective contractor have a quality control or quality assurance department?

4-C-5-b. Does the prospective contractor have written quality control or quality assurance procedures? If so, obtain a copy.

- c. Are the prospective contractor's quality procedures now implemented in all respects?
- d. Do the prospective contractor's responsible quality control personnel fully understand all quality control inspection, testing, source inspection and certification of compliance requirements of the solicitation?
- e. Do the prospective contractor's quality control personnel have the specialized inspection experience considered necessary to test the product required by the solicitation? Explain.
- f. Does the prospective contractor have the necessary facilities and equipment, including peculiar or special test equipment for performing all tests required and will it be available for the proposed work? (Obtain list of required test equipment.)
- g. Are the prospective contractor's quality assurance procedures and controls adequate in all respects to meet the requirements of the solicitation?

6. Government Property.

- a. Does the prospective contractor have written procedures for control of Government property?
- b. Is there a particular employee designated as Government property representative?
- c. What facilities does the prospective contractor have for protecting and safeguarding of GFP?
- d. Does the solicitation provide for the furnishing of GFP? Does the prospective contractor plan to ask for any GFP? If so, identify type of property and reason for request.
- e. Will the prospective contractor acquire any property for the Government other than that to be incorporated into the product? If so, identify the type of property. Does the prospective contractor's control system provide for control of contractor-acquired property as well as GFP?

7. Security.

- a. Does the proposed contract require plant security clearance?

4-C-7-b. What Government agency has plant security cognizance of the contractor's facility?

c. What is the level of security clearance that has been granted the contractor's facility by a Government agency?

8. Summary of Facilities. Are the facilities of the prospective contractor adequate in all respects to satisfactorily perform the proposed contract?

9. Skills.

a. Present number of employees by skills.

- (1) Professional (Scientific) _____.
- (2) Engineers _____.
- (3) Quality Control _____.
- (4) Production _____.
- (5) Managerial or Administrative _____.
- (6) Others _____.

10. Offeror's Record of Integrity, Judgment and Performance.

a. Has the prospective contractor previously completed a contract with the Coast Guard? Yes ____ No _____. Identify the contracts by commodity and total value.

(1) Were delivery schedules met? If not, why?

(2) What problems, if any, were encountered?

b. Has the prospective contractor previously completed contracts for other Government agencies? Yes ____ No ____

(1) Were delivery schedules met? If not, why?

(2) What problems, if any, were encountered?

c. Does the prospective contractor presently have Coast Guard contracts? Identify contracts by number, commodity, and value.

(1) Is contract(s) on schedule? If not, why?

(2) What problems are being encountered?

(3) What percentage of current contracts are delinquent in performance?

(4) Did the Government cause or contribute to the problems or were they within the control of the contractor?

4-C-10-d. Does the prospective contractor presently have contracts with other Government agencies? Identify by agency, number, commodity and value.

(1) Is contract on schedule? If not, why?

(2) What problems are being encountered?

(3) What percentage of current contracts are delinquent in performance?

(4) Did the Government cause or contribute to the problems or were they within the control of the contractor?

e. Has the prospective contractor required unusual and burdensome (to the Government) assistance (e.g., inspection, testing) on above contracts?

f. Does the prospective contractor have a satisfactory record of integrity, judgment, and performance?

11. Ability to Comply with Delivery or Performance Schedule. Does the prospective contractor have the ability and all things necessary to comply with the delivery or performance schedule of the solicitation?

CHAPTER 5. POST AWARD CONFERENCE / CONTRACTOR INITIAL CONTACT

- A. Introduction. Even though a preaward survey may have been conducted, after contract award a post award conference should always be held to determine if the contractor and the Coast Guard agree on what is required by the contract requirements. It is extremely important to resolve any problems early before they can become major. Experience has shown that this is the most important conference in the life of a contract and that it should be conducted for every contract.
- B. General. This conference differs from the preaward survey in that this conference occurs after the contractor makes firm material and manufacturing obligations to provide the required products and services. Prior to contract award all information obtained was based on anticipated obligations. This conference is between the contractor and representatives of Coast Guard contracting, engineering and quality assurance. If a post award is not held, the QAR should initiate, in coordination with the contracting officer, a contractor initial contact (CIC). The CIC is similar to a post award conference except that only the contract specification requirements are reviewed. Generally, contracting and engineering are not present.
- C. Time of Conference. The conference should be held not later than 20% of the time period scheduled for first (article) delivery or not later than 60 days after contract award, whichever is earlier. Also it should not be held earlier than 2 to 4 weeks after award. This time frame allows the contractor to review the contract and develop his plans, yet is early enough to prevent progress in the wrong direction.
- D. Conference Preparation. Since this is an extremely important conference, more so than others, each member of the Coast Guard team should be thoroughly familiar with all aspects of the contract specification requirements. To insure this, the following should be accomplished.
1. Create a contract file containing the basic contract and its amendments and modifications and all applicable documents and drawings referenced in the specification.
 2. Review all documents contained in the contract file using Chapter 3, CONTRACT REVIEW, as a guide. Any discrepancies revealed by the review must be immediately brought to the attention of the contracting officer for their resolution before the convening of the post award conference.

- 5-D-3. Participate in a review session prior to the post award conference with all members of the post award team. It is extremely important that when in conference with the contractor that the Coast Guard itself concurs on all aspects of the contract.
- E. Contractor Notification. Notification of the Coast Guard's intent to conduct a post award conference or CIC should be by the contracting officer. The date and time of the conference is usually by mutual agreement with the contractor. The agenda, however, should be determined by the Coast Guard. The contractor should be notified of the agenda so that all pertinent contractor personnel can attend.
- F. Place of Conference. The conference should be held at the contractor's facility where performance of the contract will be conducted. This allows the contractor to have all resources which may be needed at hand. This also allows the Coast Guard to review the facility to better understand the contractor's intended procedures for performance of the contract.
- G. Tour of Contractor's Facility. At the time of but prior to conducting the conference, the QAR should request the contractor to conduct a plant tour. Many facts can be learned during this tour; more than can be listed here. Make careful mental notes but record few written notes during the tour. Contractors seem to have less to say and respond less spontaneously when written notes are taken. Examples of these helpful facts are listed below:
1. Does there appear to be a good employer/employee relationship? This relationship will have an effect on the contractor's performance, good or bad.
 2. Does the contractor have other on-going contracts? Commercial - Military? What is their dollar value? This will help the QAR better estimate where the Coast Guard stands on the production priority list should the contractor experience a production crisis.
 3. During the tour, have the contractor explain which areas, what processes, what personnel will be utilized for the Coast Guard contract. QAR can use this information to better analyze where the contractor could cut costs, hence quality or delivery, should profits from the contract decline.
 4. Anything that can be learned about the contractor's procedures, policies or personnel is useful. It is all necessary to better understand future actions by the contractor.

5-H Conference Proceedings. The proceedings will be conducted by contracting officer, or his representative (usually the contract administrator). For the CIC, the QAR should be the conductee. For either conference, the QAR should be the spokesman for the review of the contract specification requirements. This will help the QAR establish, early on, an awareness and confidence in the very important QAR/contractor relationship. The QAR will establish credibility with both the contractor and engineering by being knowledgeable and objective in the interpretation of the contract specification requirements. By establishing correct contractual procedures during the contract review for dealings with the contractor, the QAR establishes credibility with the contracting officer.

I. Pre-Contract Review Guidelines. There are standard guidelines which the QAR must establish, first thing, with the contractor prior to the start of the contract review. These guidelines apply throughout the QAR's involvement with the contractor's performance of the contract.

1. The QAR cannot change, delete or add any requirements to the contract, and anything said during this conference or at any time during the life of the contract shall not be construed as such. The contracting officer and only the contracting officer can make changes to the contract and these will be in writing.
2. At any time, should the contractor differ with the QAR on the interpretation of a requirement, the contractor shall notify the contracting officer in writing of such and await the determination of the contracting officer and only the contracting officer.
3. Since the contractor has entered into a contract with Coast Guard, the contractor has defined responsibilities. The contractor, upon learning that he has not complied with or cannot comply with any contract requirement, shall notify the contracting officer in writing as to the following:
 - a. The detailed reasons for the noncompliance or inability to comply.
 - b. What steps are being taken to rectify the situation.
 - c. What steps are being taken to insure no reoccurrence of the situation.
 - d. If the situation affects the delivery schedule, propose a new delivery schedule.
4. The QAR can now begin the review of the contract specification requirements with the contractor.

5-J. Methods of Contract Review. The QAR should ask many questions and let the contractor answer. The conference is intended for learning the contractor's (and not the Coast Guard's) viewpoint. The Coast Guard team should face the contractor during the review and take note of the contractor's reaction when reviewing the requirements. The QAR should ask additional specific questions to ascertain the reasons for any significant reaction. Detail notes must be taken not only on any problem area discovered, but also on the general conduct of the review. The contract review should be conducted in accordance with the methods listed below. The Coast Guard should determine prior to the conference which method of review will be utilized.

1. Method A. Read aloud word by word, sentence by sentence each and every paragraph of the contract and its clauses and specifications. This is time consuming but is never a waste of time. This is the most effective review method.
2. Method B. Read only the portions of the basic contract that define the deliverables. Proceed to read only the heading of each paragraph of the specification. As each is read, ask if the contractor has any problem with the paragraph. If the contractor does not appear to be interested or is not actively responding, ask questions to determine if the contractor really understands the paragraph or revert to Method A. Specifically point out any items in the paragraph which must be submitted to the Coast Guard. Often these items are not delineated in the delivery schedule.
3. Method C. Generalized discussions on the contract package. This method, unfortunately, sometimes occurs on major contracts with a large specification and/or a large contractor proposal as part of the contract. With this extensive documentation and the larger number of people involved, it becomes questionable whether time can be spent on every paragraph. Post award conferences for these types of contracts often become no more than a public relations effort on the part of the contractor with nothing but optimistic projections. The QAR must constantly guard against allowing this to occur and to steadfastly pursue the review of those known critical areas of the contract or proposal. In this situation, the importance of the Coast Guard pre-conference review session cannot be overemphasized. The QAR should attend all conferences. The review procedures below could be used to better insure a successful conference:
 - a. Divide the contract up among the team members for individual reviews with contractor personnel. Any problem areas identified would then be discussed in a meeting of the entire contractor/Coast Guard contingent. If the problems are lengthy or complex, a later meeting may be decided upon.
 - b. Utilize several conferences and limit discussion to specific areas. This would limit the number of people necessary to attend at one time.

5-J-3-c. Limit the conference to critical areas. The Coast Guard should provide a list of these areas to the contractor prior to the conference.

d. The Coast Guard and the contractor could compare Milestone and PERT charts to highlight problem areas and to determine the necessity and topics of future conferences.

K. Basic Contract Review. The basic contract and its amendments and modifications should be the first contract documents reviewed. Insure that the contractor has all of the contract documents. Most Coast Guard contracts use a Standard Form SF 33-A or some variation thereof; and hopefully, contain the same information. There are certain portions of the basic contract which could conflict, change, add or delete the requirements contained in the contract specification. As a minimum, the following areas and their purpose should be reviewed:

1. What items and quantities are being procured. This should be on, or begin on, the first page of the basic contract. Some contracts do not award all items to a single contractor, but rather divide the items between different contractors.
2. Order of precedence, paragraph 19 of SF 33-A. Every contract needs an order of precedence.
3. What standards or specifications are applicable. These should be reviewed in detail during the specification review.
4. Delivery schedule. Always ask the contractor if any difficulty is anticipated in complying with the schedule. (Review in detail the production milestones and PERT charts during the specification review.)
5. Inspection and acceptance. Where will these occur? Is any notification of readiness for inspection required of the contractor.
6. Delivery destination and responsibility for shipping charges.
7. First article clause. First article reports and approval.
8. Progress payments.

L. Specification Review. All areas of the specification and its applicable documents, drawings, etc., must be reviewed. Although the specification review will be a very tedious and boring exercise, experience has shown that at least one of the situations listed below will be discovered.

5-L-1. The contractor cannot, will not or never intended to comply with some requirement(s).

2. The contractor "missed" a requirement (usually more than one) when he bid on the contract. The most common omission is all of the preservation, packaging and packing requirements for delivery.

3. The contractor does not have the applicable documents (MIL-SPECs, STDs, etc.) required to be used to produce the items required. (How could the contractor properly prepare a bid if he did not have all the requirements in his possession upon which to prepare the bid?)

4. The contractor insists that the Coast Guard has specified something that is not state-of-the-art and no manufacturer in the industry has done it that way for years. This, unfortunately, is often true and may warrant re-evaluation by the Coast Guard, but the contractor bid it that way.

5. A requirement in the basic contract either contradicts or conflicts with a requirement in the specification which deletes an important technical requirement (refer to the basic contract order of precedence).

M. Result of the Post Award / CIC. As a result of reviewing the many aspects of the contract, the conference should result in the following:

1. The Coast Guard and the contractor have a mutual understanding of the contract specification requirements as they are written.

2. Any problem areas have been revealed.

3. The Coast Guard has a better evaluation of the contractor's technical, performance and delivery capabilities.

N. Post Award / CIC Summary. At the conclusion of the contract review, important points and items requiring action must be summarized.

1. If possible have the minutes of the meeting transcribed and copies distributed to attendees. The minutes should include as a minimum the date, attendees, clarification of ambiguities, action items and responsibilities for action items.

2. The QAR shall provide to the contracting officer a written report detailing all aspects of the conference.

CHAPTER 6. QUALITY ASSURANCE INSPECTION

- A. Introduction. The purpose of inspection by the Coast Guard is to assure that the products and services procured conform to the quality and quantity requirements of the contract. Inspection is the key to the Coast Guard's ability to enforce the quality provisions of a contract. Unless an inspection has been conducted, there can be no assurance that the products and services conform to the contract specification requirements. The QAR, as a quality assurance inspector, should conduct quality assurance inspections before the Coast Guard's acceptance of the products and services for delivery.
- B. General. By Webster's definition, inspection means to examine critically; especially in order to detect flaws, errors, etc. In Government contracting, the contractor is required to assure that the products comply with the contract specification requirements. To accomplish this, the contractor establishes and performs quality assurance procedures. The cost of these quality assurance procedures is a part of the total cost paid to the contractor by the Government for the products. Since the contractor is being paid to assure product compliance, the QAR should perform inspections only as a quality assurance inspector. A quality assurance inspector does not inspect the products but rather for the adequacy of the contractor's quality assurance procedures to assure the products comply with the contract specification requirements. Most often, verification of this adequacy can only be done by witnessing the contractor utilize the quality assurance procedures to inspect the products, and then reviewing the contractor's results.
- C. Inspection and Testing. Inspection means the examination (including testing) of products (including, when appropriate, raw materials, components and intermediate assemblies) to determine whether the products conform to the contract specification requirements. Testing is an element of inspection and generally denotes the determination by technical means of the properties or elements of products, or components thereof, and involves the application of established scientific principles and procedures.
1. As a quality assurance inspector, the QAR only witnesses testing for conformance. The QAR will, however, have to perform visual examinations to determine the contractor's conformance. The goal of the visual inspection is still only to determine the adequacy of the contractor's quality assurance procedures to assure conformance. The QAR shall not perform or assist in performing any testing required of the contractor.
 2. During the inspection and testing, it is the duty of the QAR to determine as many areas of nonconformance as is possible without actually performing the quality assurance inspections for the contractor.

6-C-2(cont'd) Example. During the paint thickness testing of 100 buoys, the QAR witnesses that 2 buoys do not have the required thickness of paint. The QAR should notify the contractor that an area of nonconformance has been discovered but should not continue to witness this testing to "weed out" any other possible buoy paint thickness discrepancies. It is the duty of the QAR, instead, to proceed with the inspection of another area, such as visual inspection the buoy welds. If other discrepancies are discovered, continue to another area, such as overall dimensions. When all possible areas of conformance and nonconformance have been found, then the QAR may terminate the inspection. The contractor can then himself go through the entire 100 buoys and "weed out" and correct those buoys not in conformance with the contract specification requirements. Even though the QAR may be performing, to a degree, a quality assurance inspection for the contractor by continuing the inspection after discovery of the first nonconformance, it is the overriding responsibility of the QAR to determine conformance (yes or no) and the duty of the QAR to determine this conformance in as many areas as is possible.

D. Types of Inspections. Although the contractor is required to provide the necessary quality assurance procedures to assure conformance, the contract will often specify the minimum inspections the Coast Guard feels are necessary for the contractor to verify that the products comply with the contract specification requirements. Verification of compliance is usually by two basic types of inspections: first article and quality conformance.

1. First Article Inspection. A first article in the form of a sample, prototype, engineering model or a first production unit may be required as part of the contract specification. First article inspection is used primarily when product development is required prior to production but after the contract award. The first article inspection is to demonstrate that the contractor can comply with all the specification requirements. Satisfactory completion of first article inspection in no way guarantees that production items will be satisfactory.

a. Full Compliance Inspection. This is equivalent to first article inspection except that this term is for use with a Brand Name or Equal contract since development is not required and the equipments are (theroretically) already in production.

b. Qualification Inspection. This is virtually identical to first article inspection and is used primarily for establishing a Qualified Product List (QPL).

6-D-2. Quality Conformance Inspections. Quality conformance inspections are performed on production items to determine the quality of the products offered for acceptance. There are two basic types of quality conformance inspections: production and production control.

- a. Production inspection may vary from 100% screening of the items offered for acceptance (low quantity, high complexity) to relatively large sample inspections (high quantity, low complexity). Inspections are intended to be relatively simple, of short term, and use relatively simple test equipment. Production inspection should involve verification of basic parameters which indicate that the products are performing satisfactorily. The extent of any testing depends upon: critical performance criteria, quantity procured, complexity, and confidence in the contractor.
- b. Production control inspections are performed on a sample of each production lot to verify that all parameters which were originally engineered into the products are being maintained throughout the production cycle and during its many processes. These inspections will detect variances in design, manufacturing processes, and component parts. The inspection involves more complex test equipment and greater time.

E. Inspection Failures. Upon witnessing a failure, the QAR must determine the type and classification of the failure in order to determine what corrective actions the contractor can be expected to take and what action is required by the Coast Guard. For test purposes, a failure is defined as (1) an event in which an item does not perform its required functions under the specified conditions or (2) a condition in which a mechanical or structural part or component of an item is found to be broken, fractured or damaged which would cause failure under operational conditions.

1. Types of Failures. There are several types of failures which the QAR must be able to recognize.

- a. Random Failure. Failures which occur independently are called random failures. Random failures are usually caused by a failed part or poor workmanship during manufacturing.
- b. Pattern Failure. The occurrence of two or more failures of the same part in identical or equivalent application which are caused by the same basic failure mechanism is a pattern failure. Correction of this type of failure often requires an engineering change to the product being tested. Engineering changes usually require reconducting all inspections and testing and possibly returning delivered products to the contractor for correction.

6-E-2. Classification of Failures. There are several classifications of failures which the QAR must be able to recognize.

- a. Relevant Failure. These are all failures that can be expected to occur in subsequent field service.
- b. Nonrelevant Failure. This is a failure caused by a condition external to the product under test which is not a test requirement and not expected to be encountered in field service.
- c. Product Design Failure. Failure in this area places the cause directly upon the design of the product; that is, the design of the product caused the part in question to degrade or fail resulting in a failure.
- d. Product Manufacturing Failure. These failures are caused by poor workmanship during the product construction, testing or repair prior to start of the test. This also includes possible overstressing of parts by the assembly process during the manufacture of the product.
- e. Part Design Failure. This failure results directly from the inadequate design of the part. This includes such areas as the longevity of the part, and its ability to withstand continuous cycling, such as, temperature, on/off, vibration, shock, etc.
- f. Part Manufacturing Failure. This failure is the result of poor workmanship during the assembly of the part, inadequate inspection or testing by the part vendor.

F. Notification of Inspection. Most contracts require the contractor to notify the contracting officer of any inspection required by the contract prior to its being conducted. This notification should be in writing. If the QAR should determine during the inspection that the contractor was not ready for inspection, the written notification will better enable the contracting officer to reduce the contract price to recoup the expenses incurred by the QAR to witness the unsuccessful inspection. The reducing of the contract price often further conveys to the contractor of the Coast Guard's sincerity for compliance with the contract specification requirements.

G. Rapport With Other Quality Assurance Personnel. It is important for the Coast Guard QAR to establish early on a rapport with both the contractor's quality assurance personnel and any other Government agency's quality assurance personnel who may be assigned to the contractor's facility.

- 6-G-1. Should areas of nonconformance be discovered by the QAR, it is very important to know who is directly responsible for the contractor's quality assurance and who can quickly and effectively alleviate the situation. These persons should be identified early on in the contract. Once problem areas are discovered, it may otherwise become difficult for the QAR to find the person who can actually correct the problem.
2. Often a contractor will have other Government contracts for which other agencies' quality assurance personnel are either assigned or make frequent visits to the contractor's facility. The QAR should contact these persons to learn of the contractor's general performance. The QAR should use anything learned just as background information, i.e, this information should not prejudice objective evaluation and reporting of the contractor's performance on the Coast Guard contract. Additionally, the other quality assurance personnel could "keep an eye on" the Coast Guard's contract (in no way should they be active) and provide a useful contact within the contractor's facility for the QAR.
- H. Safety During Inspection. It is not the intent of any Coast Guard contract to require conformance to any requirement which will endanger either the QAR or the contractor's personnel. The QAR shall not witness any inspection nor shall the contractor be allowed to perform any inspections on a Coast Guard product under unsafe conditions such as: underneath suspended objects, crawling on or about other products near those being inspected, standing in water or oil, etc.
- I. Conformance Verification. The QAR shall reasonably verify the contractor's compliance with all the contract specification requirements. Reasonable verification of conformance is defined as the level of verification the contract requires to be accomplished by the contractor. Additionally, the reasonable verification must not cause an undue expense to the contractor.

Example: The QAR is witnessing the testing of 100 electrical units. The contract specification requires the unit to operate at 65 degrees C but environmental testing is not required. It would be unreasonable for the QAR to insist that the contractor test units at 65 degrees C because environmental testing was not required and the contractor's bid price did not include this expensive level of testing. However, it is reasonable for the QAR to visually inspect vendor's or manufacturer's specification sheets/catalogs for the individual components used in the units to determine if the components are rated for operation at the required 65 degrees C. If, for instance, it is found that a component is rated at only 50 degrees C, then the QAR could determine the units were not in conformance with the specification. If the contractor insisted that the component would operate as required but could not convince the contracting officer of this, the contracting officer could then

6-I(cont'd) direct the contractor to replace the component or test the component at 65 degrees C. If the testing confirmed the component operated as required, the Coast Guard may be required to pay for the additional testing. If the testing confirmed the component failed to operate as required, the contractor pays for the additional testing.

Example: The contract requires a hydrostatic production test to be performed on each of 100 ball valves. Each ball valve is required to be packed in a wooden crate for delivery. The contractor notifies the contracting officer of when the production tests are to be performed as required by the contract. The contracting officer, in turn, notifies the contractor that the Coast Guard will inspect the valves when they are ready for delivery. The contractor proceeds to test each valve and record the results as required, crates each valve and notifies the contracting officer that the valves are ready for delivery. During inspection the contractor provides the QAR with the production test results, but the QAR insists upon uncrating and testing some or all valves. If all valves reinspected are found to be in conformance with the specification, the QAR has imposed an undue expense upon the contractor even though the testing of each valve meets the criteria for reasonable verification. If the Coast Guard wanted to witness production testing, this should not have been waived at the time the contractor was performing the inspection. The Coast Guard may be liable for the costs of uncrating, retesting and re-crating the valves. (If the QAR had discovered a defective valve, the contractor should incur the costs.)

- J. Termination of Inspection. The point at which an inspection is terminated is often influenced, unfortunately, by the operational needs of the Coast Guard rather than the contractor's performance. Before terminating an inspection, make every attempt to confer with both the contracting officer and engineering. This is not absolutely necessary but can be very reassuring to the QAR. There are three situations which warrant termination of an inspection:

1. At any time an unsafe condition exists.

Example: During an inspection of a radio transmitter, a water line in the vicinity is leaking and a puddle of water has formed close to the unit being tested. The power input cables and the transmission cables are laying in the water. The QAR shall terminate the inspection and shall not allow the inspection to restart until correction of this unsafe condition. Or,

Example: During the visual inspection of a 150 psi pressure vessel, it is discovered the vessel does not have the required pressure certification stampings. The QAR shall not allow any testing to be started until the vessel has been properly certified for the required pressure. Or,

6-J-1(cont'd) Example: An electrical inspection is being conducted on a recently repaired, very large commutator from a Coast Guard cutter's main propulsion generator. There is room around the commutator for only the contractor's technician to perform the test because the contractor has other equipments stacked near the commutator. Apparently, the contractor expected the QAR to climb around on the surrounding equipments in order to view the test results. The QAR shall terminate the inspection because of this unsafe situation until the contractor either moves the commutator to a clear area or clears the area surrounding the commutator.

2. Continuing the inspection when known areas of noncompliance will invalidate the results obtained from further testing.

Example: During the first article inspection of a steam heating boiler, it is discovered that the boiler skin temperature is 300 degrees F, exceeding the required maximum of 150 degrees F. Correction of this discrepancy will require major engineering changes to the boiler which may completely change the boiler's performance characteristics. Therefore, continued testing is not warranted since the boiler's required performance would have to be reverified and probably be quite different after the engineering changes are completed. All possible visual inspections, however, must be performed.

3. When, because of the type or number of failures observed, continuing would in fact result in the QAR performing inspections for which the contractor is responsible.

Example: The contractor has notified the contracting officer that a lot of 30 LORAN receivers is ready for acceptance and delivery. During the acceptance inspection the QAR witnesses 4 out of the first 5 receivers fail the test requirements. Since the failure rate is so high, if the inspection is continued, the QAR will essentially be "weeding out" the good receivers from the bad. The "weeding out" is a task for the contractor's quality assurance personnel. The cost of any necessary "weeding out" is part of the contract price paid to the contractor.

- K. Notifying the Contractor of Inspection Termination. The QAR should attempt to have the contractor terminate the inspection if nonconformance is discovered. Remember, the contractor is responsible for conformance, not the Coast Guard. Whatever the actual cause of the nonconformance might be (engineering defect, workmanship, overlooked requirement, etc.), the fact that the nonconformance was discovered after the contractor had given the Coast Guard notification of readiness for inspection or delivery is an indication the contractor's quality assurance procedures are not adequate to assure conformance.

6-K-1. Some contractors in an effort to increase profits will cut costs in the area of quality assurance. The contractor will risk utilizing less quality assurance hoping the product will be manufactured right the first time and be accepted by the Coast Guard. This action is a very acceptable and legitimate risk provided that the product complies with all the contract specification requirements when offered to the Coast Guard for acceptance and delivery.

2. When nonconformance is discovered, the QAR must take steps to insure the contractor (1) realizes that the Coast Guard views the nonconformance as a failure to provide adequate quality assurance, and (2) institutes the necessary quality assurance procedures. Often the contractor's people, such as a test technician, production manager, project engineer or manager (but rarely anyone from quality assurance) will try and "smooth over" the situation with statements such as, "I think we see what the problem is: why not go to lunch now and we should have it fixed when you return" (rarely happens) or "Why don't you come back in the morning: I think we can have this problem resolved by then and we can continue the inspection." When nonconformance is first detected, the QAR must insist that the Contractor utilize the necessary quality assurance procedures.

Example: The QAR has witnessed 4 out of the first 5 in a lot of 30 receivers fail inspection. The QAR should go to the manager of the contractor's quality assurance and state something similar to, "Of those 30 receivers you notified the Coast Guard as being ready for delivery, I have witnessed 4 of the first 5 fail the test. What are you going to do about it?" The contractor will usually indicate total surprise and disbelief. The QAR should then state, "Whatever the problem, when it is corrected and documented and you can assure the Coast Guard that the problem no longer exists in the entire lot of 30 receivers, the Coast Guard will consider restarting the inspection." The QAR should then observe the corrective measures taken. It is often amazing the amount of effort a contractor will expend when he realizes that his own quality assurance people, and not the Coast Guard, will have to assure conformance before the product is accepted by the Coast Guard. Remember, the QAR should not perform work for the contractor. Unless the QAR takes some type of firm action, it is very easy to fall into the trap or habit of providing quality assurance inspections for the contractor rather than the Coast Guard.

CHAPTER 7. ACCEPTANCE AND DELIVERY

- A. Introduction. As used in Government contracts, "acceptance" generally means the act by which the Government assents to ownership of the specified products or approves specific services rendered as partial or complete performance of the contract. Unless otherwise specified in the contract, the Government thereby acknowledges that the products or services are in conformity with contract requirements including those of quality, quantity, packaging, and marking.
- B. General. The QAR shall not accept, or recommend to the contracting officer for acceptance, any products or services offered for acceptance and delivery by the contractor until the quality assurance inspections are completed and reveal compliance with all the contract specification requirements.
- C. Acceptance of Nonconforming Goods or Services. If the contracting officer determines that the acceptance of products or services which are not in compliance with all the contract specification requirements is in the best interests of the Coast Guard, then the contracting officer, and only the contracting officer, should accept the nonconforming products or services. The QAR shall neither accept nor recommend acceptance to the contracting officer, products or services which are not in compliance with all the contract specification requirements, unless by contract modification the contract specification requirements are changed to the extent that the products or services are brought into compliance with the contract specification requirements.
- D. Discovery of Nonconformance After Acceptance. It is extremely important that the QAR verify the contractor's compliance with the contract specification requirements to the greatest extent allowable. Acceptance by the Government is final unless the Government can substantiate that the product either had a latent defect, or that fraud or gross negligence amounting to fraud on the part of the contractor existed at the time of acceptance. All are extremely difficult to substantiate. Even though the term latent defect is much used and apparently thought of as a "catch all" for any problems which may be discovered in products once accepted, it is often very difficult to substantiate.
 - 1. Latent Defect. Simplified and as applied to Government acceptance, a latent defect is a defect which was present but would not normally have been inspected for prior to acceptance or could not reasonably have been detected during testing and, therefore, could not be expected to be discovered until after acceptance and use. If the QAR did not verify or attempt to verify the contractor's compliance with all the contract specification requirements, the contractor could be successful in disputing the Government's claim of a latent defect.

7-E. Types of Delivery: Effect on Point of Acceptance. The Coast Guard most often specifies, in some form, two basic types of delivery: f.o.b. origin and f.o.b. destination. The type required determines the place and number of quality assurance inspections the QAR will perform for acceptance and delivery.

1. Point of Acceptance. Contracts which provide for delivery f.o.b. origin shall ordinarily provide for acceptance and inspection at origin (contractor's facility). Contracts which provide for delivery f.o.b. destination shall provide for acceptance at destination whether inspection is to occur at destination or at origin.
2. F.o.b. Origin. Simplified, f.o.b. origin usually means that for delivery the contractor is only responsible for placing of the products on, and in a manner acceptable to, the mode of transportation, such as a common carrier (truck, airplane, etc.). Acceptance by the Coast Guard is usually at this time. The QAR should inspect the products when readied on the carrier for delivery. Once accepted, the contractor is not responsible for damage to the goods caused by the carrier. Generally, the Coast Guard will issue the contractor a Government Bill of Lading (GBL) thereby paying for the cost of transportation to the delivery destination.
3. F.o.b. Destination. Simplified, f.o.b. destination means that the contractor is responsible for the cost and undamaged arrival of the products at the required delivery destination. Generally, the contract requiring this type of delivery will require Coast Guard inspection at origin.

F. Procurement Quality Assurance (PQA). This term, normally abbreviated as PQA, means the QAR has determined that the products are in compliance with the contract specification requirements by performing quality assurance inspections, but that further inspections (usually at destination) are required before final acceptance by the contracting officer.

G. Material Inspection and Receiving Report (DD-250). Most Coast Guard contracts require notification of PQA or Acceptance by the preparation and distribution of the Material Inspection and Receiving Report (DD Forms 250 Series). The contractor is to prepare the DD-250 for the QAR's signature. Often the QAR will have to assist the contractor in its preparation.

7-G-1. Use. The DD Form 250 is a multi-purpose report used for:

- a. PQA - to provide evidence of PQA at origin or destination.
- b. Acceptance - to provide evidence of acceptance at origin or destination.
- c. Packing list.
- d. Receiving report.
- e. Shipping invoice.
- f. Contractor invoice.
- g. Contractor commercial invoice support.
- h. Contractor internal use.

2. Distribution. The QAR shall distribute at least one copy of the DD-250 to each of the following:

- a. With each shipment.
- b. To the delivery destination consignee.
- c. To the contracting officer.
- d. To the Coast Guard project engineer.
- e. To the QAR's contract file.

DD FORM 250 - MATERIAL INSPECTION AND RECEIVING REPORT

This form is used to document PROCUREMENT QUALITY ASSURANCE (PQA) and ACCEPTANCE of supplies, services and shipments. It is also used as a Packing list (for receiving and shipping), a contractor invoice, contractor commercial invoice support and for contractor internal use.

Three ALPHA
Four NUMERIC
Plus "2" if FINAL

Contract No.
&
Order No.

S-Source
D-Destination

F.O.B.
S-Source
D-Destination
O-Other

CHECK CONTRACT...
DO NOT SIGN
UNLESS
FILL IN A or B AS REQUIRED
BY THE CONTRACT-SIGN P.O.A.
IF NOT AUTHORIZED TO ACCEPT

MATERIAL INSPECTION AND RECEIVING REPORT		DOT-CG-XXXXXX		XXX		1 2	
AAAS555		DDMMYY		BILL of LADING NO.		PERCENTAGES & DAYS Transport Control# ALLOWED	
Contractor's: complete address		CODE		Contract Administration Office Address		CODE	
Shipped From:		CODE		S/D/O		CODE	
"SEE BLOCK No. 9"		CODE		Payment Office Listed in Contract		CODE	
Complete Address Listed in Contract		CODE		M/F Instructions or Address Listed in Contract		CODE	
ALL INFORMATION IN THIS AREA IS TAKEN DIRECTLY FROM THE CONTRACT, AND SHALL BE ACCURATELY TRANSCRIBED							
<div style="display: flex; justify-content: space-between;"> <div> <p>THESE BLOCKS ARE TO BE FILLED IN BY THE CONTRACTOR ACCORDING TO THE REQUIREMENTS OF THE CONTRACT, ACCEPTANCE POINT, PQA, etc.</p> <p>NOTE</p> </div> <div> <p>FOR USE BY RECEIVING ROOM PERSONNEL ONLY</p> <p>NOTE</p> </div> </div>							

This block is provided and reserved for the use of the Contractor

BLOCK #21: ACCEPTANCE IS THE RESPONSIBILITY OF THE CONTRACTING OFFICER. Unless specifically instructed by the contract to check the ACCEPTANCE block, PQA must be utilized. PQA indicates conformance to the contract obligations concerning Quality and Quantity of the items listed. Exceptions to this shall be noted in Block #16, or an attached supporting document, with appropriate cross-references. The words "conform to contract" in the statment shall not be modified for any reason. When the contract requires PQA at both source and destination, an (*) shall be entered in Block #21A in addition to the other required information with an explanatory note made in Block #16.

CHAPTER 8. INSPECTION DOCUMENTATION

A. Introduction. Documenting written and verbal communication is necessary for any procurement. As the contract progresses, communications with the contractor and the Coast Guard can become more and more frequent and sensitive. Written documentation is the only hard substantial evidence of the history of a contract and, therefore, very valuable should any contractual disputes arise which require litigation.

B. General. All documentation prepared by the QAR shall be both factual and objective. All contract documentation both generated and received by the QAR shall be saved and readily accessible for future use. This shall be accomplished by maintaining a contract file. The contract file is not just for the storage of documentation, but should be used by the QAR as an active performance evaluation aid.

Remember: All documentation prepared by the QAR shall be both factual and objective. The document written today could very well be in a court of law tomorrow.

C. Inspection Notebook. The QAR should maintain a rough log of chronological data gathered during any visit to the contractor's facility. All rough comments of the QAR shall be objective. Trust nothing to memory. The QAR should record any and everything which is said or observed. The log is especially important during the witnessing of inspections. The pertinent data can be extracted and used to generate trip reports. The inspection notebook should be retained as a part of the contract file.

D. Trip Reports. The QAR shall prepare a trip report upon the occasion of each trip to the contractor's facility for distribution to the contract file, contracting officer and engineering. The trip report describes what the QAR has seen and heard with regard to the contract. These reports are written in an informal style and document conversations, progress based on visible evidence, objective appraisal of the contractor's anticipated performance or lack of performance, and recommendations concerning the contract proceedings.

E. Telcons. The QAR shall prepare a telephone communication report (telcon) upon the occasion of each telephone conversation with the contractor for distribution to the contract file, contracting officer and engineering. Telcons document what was discussed, learned, questioned, answered or agreed upon between the contractor and the QAR or Coast Guard during a telephone conversation. Whenever possible, the QAR should listen in on telephone conversations between the contractor and either engineering or contracting. The QAR needs to know about verbal agreements that may affect the contract specification requirements.

8-F. Conference Reports. The QAR shall prepare a conference report upon the occasion of each conference with the contractor for distribution to the contract file, contracting officer and engineering. The report should document what was discussed, learned, questioned, answered or agreed upon between the contractor and the Coast Guard during a conference. Each Coast Guard member attending should prepare a report. These should then be compared to ascertain if the Coast Guard has a common interpretation of any agreements made with the contractor and to possibly detect any unintended changes to the contract end-item requirements.

G. Letters and Memorandums. The QAR should utilize a letter or memorandum to the contracting officer when a written decision or reply concerning contractual matters is required. The QAR shall not correspond directly with the contractor. The letter or memorandum automatically documents all queries and the need for responses which may have been overlooked if included only in a trip report or telcon.

H. Contract File. The QAR should meticulously maintain the contract file in chronological order. Solicitation amendments and contract modifications should be entered in the basic contract. Authority for the change (i.e., AMD-1 or MOD-4) should be recorded on the margin next to the change. Large files may require subdivision into annual sections. If this is necessary, care should be taken to insure that the status of contracts can be determined without having to reference several different files. Accordingly, copies of documents may be required for both the new and the old files.

1. Most contracts will require only two files:

a. Basic Contract File. The basic contract containing the contract package with amendments and modifications, contract information sheet, and milestone and PERT charts all on the right side. The left side shall contain all DD-250's, progress payments, and receipts for government furnished property (GFP).

b. Correspondence File. On the right side, place all letters to and from the contractor. On the left side, place all inter-Coast Guard letters/memorandums and trip/telephone/conference reports.

8-H-2. Large contracts may require additional files. Examples are:

- a. Basic contract.
- b. Correspondence (divided into various sub-categories).
- c. Progress reports.
- d. Progress payments.
- e. Receipts for GFE and DD-250's.
- f. Test plans.
- g. Test results.
 - (1) First article.
 - (2) Production.
- h. Software submittals and reviews.



CHAPTER 9. GOVERNMENT FURNISHED PROPERTY

- A. Introduction. Most Coast Guard contracts require the contractor to be solely responsible for compliance with the contract performance requirements. When the Coast Guard assumes part of that responsibility by providing Government property, it reduces the amount of risk the contractor is being compensated for to perform on the contract. The Coast Guard's procurement policy is normally to avoid furnishing Government property unless specific advantages accrue to the Government as a result of furnishing such property.
- B. General. The QAR must insure that all Government Furnished Property (GFP) supplied to the contractor is both accurate and suitable for the purpose intended before the contractor is allowed to utilize the GFP.
- C. Advantages of Government Furnished Property. The Coast Guard has found it advantageous to furnish GFP under varying situations. Some of these situations are:
1. Economy. Economy has been achieved in those instances where the Coast Guard has been able to furnish tools, materials, laboratory services, etc., that were on hand, that otherwise would have been surplus, and where similar items would have had to be purchased to satisfy the needs of the contract.
 2. Standardization. When several contractors are working on a project, it may be advantageous for the Coast Guard to furnish research data, laboratory services, equipment or materials in order to assure uniformity in the product requirements.
 3. Competition. Providing special, peculiar, expensive, or critical research data, laboratory information, tooling or equipment, may increase the number of potential bidders by removing some of the main handicaps to their participation in this type of effort.
 4. Time Compression. Use of GFP has a potential for shorting schedules when long lead times would be needed to acquire items already in the possession of the Government. Special test fixtures or other Coast Guard peculiar equipment, when supplied as GFE, can reduce the production or testing time by increasing the contractor's capabilities.
 5. Critical Items. Some contractors might be reluctant to bid on fixed-price contracts and commit to schedule delivery dates where critical items/services are required, but would participate if those questionable items were provided GFP.

9-D. Contractor Responsibility. The contractor is directly responsible and accountable for the GFP upon receipt in accordance with the contract requirements for control of Government property. An exception to this policy may be when the Coast Guard deals directly with a subcontractor. The contractor is liable for all GFP provided under the terms of the contract, with reasonable wear and tear and consumption of consumable materials excepted.

1. Security of Government Furnished Property. The contractor must establish and maintain a system to control, protect, preserve and maintain all Government property. Such a system must have approval of the contracting officer. The QAR may use this system to monitor GFP on the contract.
2. Use of Government Furnished Property. The contractor is only authorized to use the GFP in direct performance on the contract under which it was provided, the exception being, when written agreements are negotiated with the Coast Guard.

E. Government Responsibility.

1. Administration of Government Furnished Property. When GFP is provided a contractor, the contract usually specifies that the Coast Guard assume the burden of cost and responsibility for GFP administration. The contracting officer will maintain the official records of all GFP held by the contractor.
2. Contract Performance Risk. When the Coast Guard assumes any obligation to furnish Government property, it also assumes a direct role in the performance of the products required by the contract. It, therefore, behooves the Coast Guard to carefully plan and schedule the proper item(s), in proper quantities, at the proper time and location to avoid delays and mistakes that can be used by the contractor to justify higher costs, schedule delays and other nonperformance deficiencies.

Caution: Pre-planning must prevail to prevent GFP from adversely affecting the contractor's performance of the contract which could justify increases in the contract price and delays in delivery.

CHAPTER 10. CONTRACTOR PERFORMANCE EVALUATION

- A. Introduction. Contracts require contractors to perform certain requirements in providing products and services. For the contracting officer to effectively administer a contract, the extent of the contractor's performance, or lack thereof, must be known. The monitoring and evaluation of the contractor's performance periodically throughout the life of a contract will allow the contracting officer to better anticipate and resolve any problem areas.
- B. General. The QAR should continually monitor and evaluate the contractor's performance to better anticipate any delays in delivery or compliance with the contract requirements. It is imperative that performance evaluations are both accurate and objective as the contracting officer may use the evaluations as the basis for taking actions on the contractor. Experience has shown that a pessimistic evaluation is often more accurate than an optimistic evaluation.
1. The word "evaluate" is defined as meaning to examine and judge; to appraise. Applying these words to Coast Guard contracts, performance evaluation is considered to be:
 - a. The periodic examination of the contractor's efforts to perform the contract.
 - b. Appraisalment of the extent to which these efforts have moved forward toward or backwards from completion of the contract.
 - c. A judgment of the probability of the total effort being completed as required by the contract.
- C. Determining the Extent of Evaluation. The extent to which the QAR must conduct the performance evaluation depends upon a variety of considerations. The QAR must assess these variables in order to determine the actions necessary and appropriate to enhance the probability of successful contract performance. The following should be considered:
1. The type of contract.
 2. Responsibilities of the government (e.g., Government Furnished Property).
 3. The type of specification(s) used.
 4. Cost of the contract.
 5. Progress measuring techniques allowed.
 6. The impact of modifications and changes on the contract.

10-C-7. The rights and duties regarding inspection and acceptance of the contract.

8. The contractual alternatives to surveillance and evaluation, such as dispute settlements, warranties and termination.

D. Determining the Extent of Performance Surveillance. The QAR must determine the importance of the contract activities being evaluated in order to arrive at an order of magnitude of surveillance effort and the priority of that effort. The following should be considered:

1. The size of the program in terms of:

a. Length of time.

b. Estimated cost.

2. The significance of the effort in relation to the operational needs of the Coast Guard.

3. The dependency of other programs or contracts on the outcome.

4. The confidence of the Coast Guard that the contractor can accomplish the contract tasks within the time and technical constraints.

5. The extent of the work effort required. Whatever the end purpose of the contract, a primary concern is the extent of the work required. In other words, how much work is required to fulfill the requirements of the contract. The different specification types, design or performance, have varying impacts on the extent of work. If the Coast Guard retains design control through the requiring of design approvals, the extent of work is difficult to measure unless there is a qualifying statement in the contract. The most difficult evaluation for the QAR may be evaluating internal technical aspects of the work in an effort to identify any foreseeable technical problems which might adversely affect performance.

Example: In a supply procurement the extent of work is often contingent upon the depth of application of the subsidiary specifications referenced in the product specifications. If the prospective work is the first production of an item, performance of the contract may require a measure of development work for the product, its manufacturing processes or both. Further, the extent of work is influenced by the compatibility, or incompatibility, between the specifications and drawings and the terms and conditions of the contract.

10-D-5(cont'd) Example: In a research and development effort, the contract effort itself is concerned with the advancing of the knowledge of people toward achieving technical research or development objectives. Since the knowledge of how to achieve the objectives is not known, the certainty as to how much work is required is quite minimal. Consequently, the contract requires the contractor to use his best efforts to achieve the objective. In research and development, measuring the achievement against a standard of performance for the technical objective is difficult since the standards themselves are difficult to specify.

E. Use of the Evaluation. The resulting uses of the QAR's evaluation are beneficial to the Coast Guard as a whole. Several of these benefits are listed below:

1. The contracting officer needs to be kept abreast of any possible nonconformance or delays which the Coast Guard may prevent or would justify a demand for consideration for any resulting change in the contract specification requirements.
2. The cognizant engineering division needs to be kept abreast of any possible nonconformance or delays since installation and operational planning could be impacted.
3. The evaluation provides the QAR the basis for recommending, or not recommending, approval of progress payment requests.
4. The QAR needs to know if a delay is imminent to properly reschedule travel plans for the witnessing of inspections.



CHAPTER 11. PROGRESS PAYMENTS

- A. Introduction. Because of the magnitude and complexity of today's systems and products, the Coast Guard cannot, under existing procurement policies, expect to always award contracts and then defer payment to the contractor until delivery of the item purchased. The interval between the contract award and the shipment of the first deliverable product or service may be so long that such a delay in payment would create a serious financial burden beyond the contractor's financial capabilities. Therefore, several methods of Government contract financing have been developed; one of these methods is progress payments.
- B. General. The administration of progress payments is the sole responsibility of the contracting officer. However, the QAR should be the most qualified person to verify if requests for progress payments submitted to the contracting officer are representative of materials actually purchased and work actually performed. Materials which are purchased and manufactured with progress payment funds become Coast Guard-owned materials. The QAR should know what materials in the contractor's facility are Coast Guard-owned materials and their location. The verification performed by the QAR is not a fiscal audit of the contractor.
- C. Purpose. The primary purpose of progress payments is to reduce the impact of pre-delivery expenditures for long lead time items. Such expenditures reduce the contractor's working capital and may have an adverse effect on his future ability to produce. Progress payments are of vital interest to contractors because they greatly affect their cash flow.
- D. Progress Evaluation. The QAR must continually evaluate the contractor's progress to learn what percentage of the total contract effort remains to be completed by the contractor. Measuring the contractor's physical progress is not an exact science and a great deal of judgment must be used. It will not always be possible for the QAR to match up precisely the costs incurred with the physical progress. What is expected is a reasonable assessment of physical progress versus expenditures, and an assurance that there is a reasonable relationship between the physical progress and expenditures.
1. On a production contract, physical progress can be verified by using production status reports, line of balance charts, process sheets or any other production control devices and reports maintained by the contractor. If the contractor's system has been validated under the Cost/Schedule Control System Criteria (or similar system), and the system is under surveillance by the Government plant personnel, the QAR should also use the contractor's cost and performance reports to the extent possible.

- 11-D-2. On a fixed price study contract, physical progress can be evaluated by:
- a. Reviewing monthly or quarterly contractor reports on the contract status.
 - b. Comparing engineering hours incurred to date with the minimum engineering hours required per contract.
 - c. Comparing the average contract price per month with the cost incurred per month.
 - d. Asking the project engineer for his opinion of the contractor's progress.

E. Financial Condition of the Contractor. The QAR must keep the contracting officer informed concerning the contractor's overall operations and of any financial developments that would reflect a deteriorating financial condition. For example, the QAR should be aware of any difficulties encountered or losses suffered in operations outside of the progress payment contract that could adversely affect the performance of that contract and the liquidation of the progress payments. The problems might be:

1. Gross inefficiency which might cause substantial loss on contracts.
2. Excessive rework to meet quality standards.
3. Vendors requiring cash in advance or at delivery.
4. Significant changes to the original manufacturing plans which might substantially increase cost.

F. Subcontract and Material Costs. In each contract awarded to a large business after 1 January 1972, the progress payment clause authorizes the contractor to request progress payments, based on his payments to vendors or subcontractors, but only after actual payment. When a contractor's request includes progress payments made to a subcontractor, the QAR should verify that the subcontract includes provisions requiring title to remain vested in the Coast Guard for the unfinished production work.

11-K. Production Disruption. To the extent that costs are incurred during a strike, or in any other circumstance that is disruptive to the production process, the contractor is entitled to progress payments in accordance with the terms of the contract. The QAR must take extra precautions during periods of disruption, to assure that the terms of the contract are complied with and the Coast Guard's interests are protected.

H. Suspensions or Reductions. Since the contracting officer's judgment in suspending or reducing a request for progress payment may be subjected to later review, the QAR's reviews and recommendations must be thoroughly and completely documented in the contract file. The suspension or reduction of progress payments are considered drastic measures and are invoked only after discussions with the contractor. The QAR should alert the contracting officer, at the earliest possible date, to problems which might subsequently lead to the suspension of progress payments and should be kept informed of any developments that may adversely affect the contractor's performance.

Example: When it is determined that the incurred cost, plus the estimated cost to complete the contract, will exceed the contract price, the contracting officer may reduce the progress payments to preclude premature payments. This is done by determining the ratio of the contract price to the actual cost at completion, and then applying this percentage to the incurred cost, to establish costs eligible for progress payments. The progress payments should be reduced as soon as a loss situation is discovered, so that the contractor will bear the contract loss from its inception rather than recognizing it only at the end of the contract. If this is not done, the Coast Guard may pay more through progress payments for the products or services in the early stages of the contract than envisioned at time of contract award.

I. Types of Payments.

1. Progress Payments. Progress payments are perhaps the least understood, but often the most important, type of contract payment typically encountered. A contractor can be financed by the Government with interest free "loans" called progress payments. Payments are made as work progresses under a contract usually upon the basis of costs incurred, however, in certain situations (notably construction), a percentage of completion reached, or a particular milestone of completion may be used. Progress payments can pay a contractor up to 80% (85% for small business) of his allowable incurred costs. These payments are a general debt to the Coast Guard; thus the contractor must repay them from other assets if the contract work is not performed. For the contractor to secure progress payments, the Coast Guard will obtain a lien or title to the work in progress and materials allocated to the contract.

- I-2. Unusual Progress Payment. Unusual progress payments are payments that differ from the regulations defining regular progress payments. This usually involves payments over the 80% limit (85% for small business). Such cases involve large pre-delivery expenditures in relation to the total contract price and the contractor's working capital. In establishing appropriate percentage rates, consideration should be given to the contractor's production schedule requirements, minimum inventory lead time and projected cash needs. Approval for use of unusual progress payments is exceptional and it is not a commonly used method of contractor financing.
3. Advance Payments. Advance payments are payments made by the Government in the form of advances prior to performance. This is the least desirable form of contract financing. As with progress payments, they are loans to the contractor. Advance payments differ from guaranteed loans, where working capital is sponsored by private or commercial financial institutions, since all funds are provided by the Government. Advance payments are appropriate for the following types of effort:
- a. Nonprofit contracts.
 - b. Contracts solely for management and operation of Government-owned plants.
 - c. Contracts for the acquisition of Government production and research property under facilities.
- J. Liquidation of Progress Payments. Since progress payments are essentially Government loans, they must be paid off (i.e., liquidated) when the end items are delivered and accepted. When the contractor submits a billing for the delivered items he is paid the contract price less the liquidation rate. The contractor normally liquidates his "loan" at the same rate as he receives progress payments: 80% (85% for small business).

CHAPTER 12. SPECIFICATIONS: TYPES AND APPLICATIONS

- A. Introduction. The purpose of a contract's specification is to state the Coast Guard's requirements in such a way that will be intelligible to all potential contractors and to the Coast Guard's representatives who must administer the contract after it is awarded. The ideal specification is one that is so clear and definite that it is not subject to interpretation during performance. However, in reality the ideal specification is rarely achieved.
- B. General. The specification is a most valuable document to the QAR for assuring that the products and services being procured satisfy the purposes for which they were intended.
- C. Types of Specifications. There are three basic types of specifications used in Government contracts: performance, design and purchase descriptions.
1. Performance Specifications. A performance specification contains only the detailed performance requirements of the required end items. The requirements do not include specific configuration, detailed design or exact methods of obtaining the desired performance unless directly applicable to the end use. The specification indicates what the end item will do, not how it will be accomplished. Such specifications are used extensively for the development of new types of products which tend to result in state-of-the-art advances. They are frequently used in manufacturing contracts where competition is desired between different contractors' whose products may vary in detail but which all meet the performance requirements of the Coast Guard. The contractor assumes the risk that the design, engineering and workmanship will result in compliance with performance requirements. The risk to the Coast Guard for compliance is reduced.
 2. Design Specifications. A design specification contains precise measurements, tolerances, materials, in-process and finished product tests, quality control and inspection requirements and other detailed information. The information furnished is sufficiently detailed to insure that all items manufactured to the specifications will be exactly the same. No departures in design can be incorporated. Detailed manufacturing drawings are often supplied to the contractor by the Coast Guard. The Coast Guard uses such specifications to obtain standardization, interchangeability of spare parts and complete uniformity of product even though different contractors may manufacture the product. The Coast Guard assumes the risk that the products and services will perform as intended when the contractor complies with the detail manufacturing contract end-item requirements. The Coast Guard also assumes the risk that there were no omissions, errors or deficiencies in the provided manufacturing requirements and drawings. The risk to the contractor for performance is reduced.

12-C-3. Purchase Descriptions. A purchase description normally identifies the end item by "name brand or equal." It should contain requirements (salient features) that are of particular significance to the Government. The "brand name" product must also comply with the salient features. Acceptance is based only upon compliance with the salient features required by the purchase description. Such specifications are used to procure products on the commercial market and the regulations are quite strict in limiting their use. The Coast Guard assumes the risk for performance if the "brand name" is supplied and the contractor assumes the risk for performance if an "or equal" is supplied.

D. Combinations of Specifications. In practice it is rare to find a Government specification which fits completely into one of the above categories. Most specifications contain a combination of detail requirements, performance requirements and brand name type descriptions of components. Thus, it should be noted that the regulations do not discuss specifications in these categories but talk about specifications as being federal or military, evidently accepting the fact that such specifications contain a combination of detail and performance requirements. In addition, the regulations identify standards and purchase descriptions with the general requirement that purchase descriptions must contain performance requirements whenever possible. However, for purposes of analyzing the difficulties that can arise because of Government specifications, the three types of specifications described above are much clearer and easier to deal with.

E. Defective Specifications. Many problems arise during contract performance as a result of badly written specifications. These problems are a common basis for default action taken by the Coast Guard. The major difficulties in preparing a satisfactory specification are that:

1. The products which the Coast Guard buys are usually changing in the commercial market; therefore, specifications do not remain accurate for long periods of time.
2. The compelling need to obtain competition in Government procurement forces the use of specifications in procurement before they have been proved out in actual use. Thus, numerous Government specifications are used as the basis for contracts as soon as they have been prepared or are prepared solely for the purpose of obtaining competition at an early date. These specifications have either never been tested in production or have been used in production only by the contractor that prepared them. In such circumstances, it should not be surprising that interpretation problems arise during contract performance.

12-F. Specification Type: Effect on Rights and Obligations. In terms of the rights and obligations of the parties to the contract, this classification of the types of specifications is important. There is one Board of Contract Appeals decision which has stated the legal rules applicable to these types of specifications in broad outline. Aerodex, Inc., ASBCA 7121, 1962 BCA 3592 states that:

1. with performance specifications the contractor "accepts general responsibility for design, engineering and achievement of stated performance requirements,"
2. with design specifications the Government "accepts general responsibility for design and related omissions, errors and deficiencies in the specifications and drawings,"
3. with purchase descriptions, if the specified brand name is furnished, the Government accepts the responsibility for proper performance of the product, while, if an "or equal" product is furnished, the contractor accepts responsibility."
4. This case also covers the important point of the relationship of performance and design requirements in the same specification by stating that in such cases the specific requirement of the specification which has created difficulty must be treated in accordance with its classification as a design or performance type requirement.



GUIDE FOR THE REVIEW OF
ENGINEERING DRAWINGS
AND
ASSOCIATED LISTS

- A. Introduction. An engineering drawing is the graphic language used in the industrial world by engineers and designers to express and record the ideas and information necessary for the building of machines and equipments. The drawing is the only means to project a design idea into a clear picturization which can be interpreted by any other individual with an understanding of engineering drawings.
- B. General. Engineering drawings should completely describe an object and include all reviews that are necessary to show clearly intricate and complicated shapes, give all necessary dimensions and their tolerances, identify and locate components and parts in the equipment, specify component values or characteristics, and depict the correct functional positions of these components or parts. Schematic drawings and diagrams depict the circuit interconnections and relationship of components comprising an equipment. Descriptive notes and specifications on engineering drawings give materials, finishes, treatments, and directions for manufacture, assembly, inspection, and test. These drawings include sufficient data and detail to permit reproduction of the physical and performance characteristics of the item depicted.
- C. Associated Lists. Associated with engineering drawings are several lists. These are: a) the Parts List; b) the Data List; and c), the Index List.
1. Parts List. The Parts List is a tabular listing of all the parts, assemblies, and bulk material required to make up any one over-all equipment or major assembly.
 2. Data List. The Data List is a tabulation of all drawings, lists, Government and Commercial specifications and standards, publications, and other document references on drawings and parts lists pertaining to the item for which the Data List is prepared.
 3. Index List. The Index List is a tabulation of all separate Parts Lists and Data Lists applicable to the overall system, equipment, or assembly. An Index List is required whenever it is necessary to prepare more than one separate Parts List and Data List for one overall equipment.

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- D. Phasing of Drawings. Manufacturers first prepare engineering drawings before the start of any production; these initial drawings are somewhat limited in scope, including only that detail needed by engineering management to evaluate the equipment design and to establish cost data. Upon approval of the design, detail and other related drawings are prepared to enable workers to produce the desired product. At this time, the various lists already described are also prepared. Because interchangeability is an essential part of production, the drawings include the tolerances necessary to provide for producibility with the required interchangeability.
- E. Drawings of Commercial Parts. Frequently, parts and assemblies are purchased commercially from vendors and used in an equipment without change or modification. The drawings for these commercial parts and assemblies need not be as elaborate as the drawings required to fabricate items. Engineering drawings therefore include "control drawings" which show only the essential dimensions and required performance of commercially purchased parts.
- F. Revision to Drawings. From the start, a set of drawings is not a static thing. As tooling proceeds, production design changes are made as well as changes affecting tolerances, material, and dimensions. Errors requiring corrections are found. Then, during production, additional changes are made as a result of production difficulties not contemplated at the time drawings were begun. Additionally, changes in sources of supply and improvements in methods of production and in the equipment itself may also contribute to changes in the drawings. Regardless of the reason, the drawings must be kept continuously up-to-date so that they accurately portray the item currently being produced.
- G. Drawings Proven in Production. After sufficient experience in production, the number of drawing revisions should taper off, and the drawings may be considered a sound set, "proven in production." It may be noted that drawings which have not been used during production are not proven drawings and cannot be fully relied upon, particularly by a manufacturer other than one who prepared the drawings, without a thorough prior check. Proven drawings, in contrast, may be used again and again to reproduce an equipment with all equipments containing the same interchangeability features. Yet even proven drawings do not necessarily cover the last word in productivity for a given basic design. The last word in this regard occurs only when production engineering concerns itself with the methods required to produce the given design and when such production engineering alters that design for optimum producibility.

GLOSSARY

ACCEPTANCE - the act by which the Government assents to ownership of the specified products or approves specific services rendered as partial or complete performance of the contract.

CONTRACT - a formal agreement between the Coast Guard and civilian contractors which states the conditions and requirements for products and services to be provided.

CONTRACTOR INITIAL CONTACT (CIC) - an initial conference to determine if the contractor and the Coast Guard agree on what is required by the contract end-item requirements.

DESIGN SPECIFICATION - contains precise measurements, tolerances, materials, in-process and finished product tests, quality control and inspection requirements and other detailed information. The information furnished is sufficiently detailed to insure that all items manufactured to the specifications will be exactly the same.

END-ITEM - that product or service to be provided in accordance with the contract quality and quantity requirements.

FIRST ARTICLE INSPECTION - is to demonstrate that the contractor can comply with all the contract specification requirements.

INSPECTION - is the examination, including testing, to determine conformance to the contract specification requirements.

MILESTONES - are events necessary to comply with the contract specification requirements.

PATTERN FAILURE - is the occurrence of two or more failures of the same part in identical or equivalent application which are caused by the same basic failure mechanism.

PERFORMANCE SPECIFICATION - contains only the detailed performance requirements of the required end items. The requirements do not include specific configuration, detailed design or exact methods of obtaining the desired performance, unless directly applicable to the end use.

PROGRAM EVALUATION AND REVIEW TECHNIQUES (PERT) CHART - shows the idealized progress of a contract in time order from award to completion.

Glossary (cont'd)

POST AWARD CONFERENCE - a conference between the contractor and representatives of Coast Guard contracting, engineering and quality assurance to determine if the contractor and the Coast Guard agree on what is required by the contract requirements.

PREAWARD SURVEY - is an evaluation of a prospective contractor's technical and financial capability to perform in accordance with the contract requirements.

PROCUREMENT QUALITY ASSURANCE (PQA) - indicates Government verification of conformance to the contract quality and quantity requirements.

PRODUCTION CONTROL INSPECTIONS - are performed on a sample of each production lot to verify that all parameters which were originally engineered into the end-items are being maintained throughout the production cycle and during its many processes.

PRODUCTION INSPECTION - is the verification of basic parameters which indicate that the end-items are performing satisfactorily.

PROGRESS PAYMENTS - reduce the impact of a contractor's pre-delivery expenditures for long lead time items.

PURCHASE DESCRIPTION - identifies the end item by "name brand or equal." It only contains requirements (salient features) that are of particular significance to the Coast Guard.

QUALITY - is conformance to the contract specification requirements.

QUALITY ASSURANCE - is all those planned or systematic actions necessary to provide adequate confidence that end-items comply with the contract specification requirements.

QUALITY CONFORMANCE INSPECTION - verifies the adequacy of the contractor's quality assurance procedures to assure the end-items comply with the contract specification requirements.

RANDOM FAILURES - are not related and independently occur.

TESTING - is an element of inspection and generally denotes the determination by technical means of the properties or elements of products, or components thereof, and involves the application of established scientific principles and procedures.

H. Uses of Drawings. Drawings and associated lists are used by the Coast Guard for any and all of the following functions:

1. Design Disclosure.
2. Procurement of Equipment or Parts.
3. Manufacture, Production or Construction.
4. Evaluation, Control, and Approval of Design, Performance Reliability, Safety and Interchangeability.
5. Quality Assurance (Inspection or Testing).
6. Handling and Packaging.
7. Installation, Standardization, Indoctrination and Training.
8. Maintenance, Operating, Repair, Overhaul and other Logistic Support Functions.

I. Drawing and List Review. In the preceeding paragraphs, it was pointed out that a review of the engineering drawings and lists was made as a final step in the Coast Guard's procedure for control of the quality of the material. This review is a joint responsibility of the project engineer and the drawing review representative or other assigned personnel. The general responsibilities of each individual are outlined in the following paragraphs.

1. Responsibilities of the Project Engineer. The project engineer reviews the drawings and associated lists to insure that the following requirements have been accomplished.
 - a. That the layout drawings authentically portray the latest design function and specification requirements.
 - b. That the drawings accurately represent the equipment and/or parts.
 - c. That the information delineated on the drawings and in the data package is technically correct.
 - d. That the wiring diagrams, schematics, master patterns, etc., accurately represent the actual electronic circuits in the equipment.
 - e. That applicable electrical or electronic criteria, special test and/or special inspection requirements are specified or referenced on the drawings for the equipment, assemblies, and components as required to support manufacture, inspection, procurement and provisioning.
 - f. That the specification and technical requirements given on Specification and Source Control Drawings are complete and technically accurate.

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- I-1-g. That the materials, essential processes, dimensions and tolerances specified on the drawings are technically correct and applicable.
 - h. That the essential processes, dimensions, and tolerances specified on the drawings reflect the interchange, interfit, or functional requirements of the product and have not been established to reflect manufacturing requirements.
 - i. That acceptable alternate construction or material has been specified when the Project Engineer deems such information desirable.
 - j. That the component and/or parts listed in individual bills of materials on the drawings are the actual items incorporated in the equipment.
 - k. That proprietary components or processes have not been utilized which unduly limit competitive procurement. That the use of proprietary items has been authorized by the Government when deemed essential.
 - l. That components selected for incorporation into the equipment, whenever practicable, are standard components.
 - m. That true position tolerancing, datum lines, and geometric symbols have been specified on the drawings where applicable.
- 2. Acceptance by Project Engineer. Upon completion of the technical review by the project engineer, acceptance of each drawing is indicated by signature in the design approval block on the drawings.
 - 3. Responsibilities of Drawing Review Representative. The drawing representative reviews the drawings and associated lists to insure that the requirements below have been accomplished:
 - a. That the drawing package includes all drawings, lists, and reference documents required to enable procurement of the equipment or components from any other competent source.
 - b. That a sampling dimensional check of the drawings comprising a representative assembly or sub-assembly show a dimensional and tolerance accuracy to indicate that the drawings have been properly prepared and checked for dimensional errors prior to use.

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- I-3-c. That the drawings shall be capable of producing reproductions or microfilms conforming to the legibility requirements for reproduction.
- d. That the nomenclature, numbering, application block data, etc., are correct to enable proper control in the record system.
- e. That lists, quantities, descriptions, and specifications including material, etc., are correct to insure procurement accuracy.
- f. That the necessary number of drawings and essential detail on drawings are furnished as required to support provisioning and maintenance.
- g. That previously designed Government, Industry, and commercial items have been used when available and suitable for design intent.
- h. That part numbering requirements are specified on the drawings.
- i. That Specification or Source Control Drawings contain the applicable envelope or interchange dimensions, vendor sources, and appropriate applicable specifications.
- j. That specifications for such items as materials, finishes, packaging, etc., given on the drawings include the necessary class, type and/or grade descriptions to clearly define the requirements.
- k. That all drawings and data have been prepared in accordance with applicable standards and specifications.
- 4. Acceptance by Drawing Review Representative. Upon completion of the review by the drawing review representative, acceptance of each drawing is indicated by signature in the documentation approval block on the drawings.

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- J. Summary. The drawings and associated lists comprise a tool which provides the technical description required to document a design and build an equipment. Their accuracy is of further importance for they represent a source of supporting documentation for logistics and for maintenance. Thus errors in drawings, if left uncorrected, are compounded many times and subsequently appear as equipment faults, provisioning discrepancies, and maintenance mistakes. In contrast, accurate drawings facilitate production and production competition, assure interchangeability, and aid the Agency immeasurably in fulfilling its equipment support functions. The engineer will find the time he devotes to drawings very rewarding inasmuch as such effort is essential to the success of his overall equipment program.

DRAWING REVIEW - GENERAL DRAWING REQUIREMENTS

1. Drawing meets microfilm and reproducibility requirements. _____
2. Drawing number is correct and in proper location. _____
3. Code identification number is correct. _____
4. Title block information correct and complete;
nomenclature and security classifications and lists
conform to titles and classifications assigned on NSA
Nomenclature Request Form. _____
5. Contractor approval blocks complete. (Spec.) _____
6. Tolerance block completed. _____
7. Applicable security information applied and located
properly. MIL-STD and DOD Industrial Security Manual. _____
8. Application block completed. _____
9. Revision information area reserved. _____
10. Drawing sheets numbered correctly. _____
11. Scale block is completed. _____
12. Contract No. block completed. _____
13. Abbreviations are per MIL-STD _____. _____
14. Drawing designation and related notes applied.
(Example: source control drawing, specification control
drawings, etc.) _____

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DRAWING REVIEW - DRAWINGS AND ASSOCIATED LISTS

1. Continuity check of the Drawing Package shows that it includes all drawings, lists, and referenced data as specified in the Procurement Specifications or other contractual documents. These may include the following but are not necessarily limited to the items listed below:

- | | |
|--|-------|
| a. Engineering Drawings | _____ |
| b. Data List | _____ |
| c. Index List | _____ |
| d. Master Patterns | _____ |
| e. Wiring Diagrams and Schematics | _____ |
| f. Package and Preservation Drawings and Lists | _____ |
| g. Special Test Equipment Drawings and Lists | _____ |
| h. Installation Drawings and Lists | _____ |
| i. Maintenance Drawings and Lists | _____ |
| j. Running Lists | _____ |
| k. All other specified drawings or lists | _____ |
| l. Special process sheets | _____ |

ENGINEERING REVIEW - ASSEMBLY DRAWINGS

1. The assembly drawings portray the latest design and specification requirements. _____
2. The assembly drawings accurately portray the actual equipment. _____
3. The parts or components listed in the bill of material are the actual items incorporated in the equipment. _____
4. The applicable electrical and electronic criteria, special test and/or special inspection requirements are specified or referenced on the assembly drawings and are technically accurate. This includes such items as the following: _____
 - a. Test and Performance Requirements
 - b. Shock and Vibration Requirements
 - c. Fungus Proofing
 - d. Lubrication Requirements
 - e. Finish Specifications
 - f. Unique Requirements
 - g. Other Applicable Specifications
5. The test, inspection, and other technical information specified or referenced on the drawing is adequate to support manufacture, procurement, and provisioning. _____

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DRAWING REVIEW - ASSEMBLY DRAWINGS

1. Necessary views are shown and properly located on the drawing form. _____
2. Required assembly and reference dimensions are given, dimensions are shown only once, and on the proper view. _____
3. A sample dimensional and tolerance accuracy to indicate that the drawings have been properly prepared and checked for dimensional accuracy. _____
4. A sample cross-reference inspection of assembly and related details shows a correct listing of components specified and physical compatibility between related components or details. _____
5. Assembly drawings depict detail parts with sufficient clarity to be self-explanatory without reference to detail or other drawings. _____
6. Components are identified on the assembly drawing by find numbers and properly defined in the material list. _____
7. When applicable, necessary schematic and wiring diagrams are referenced on the drawing. _____
8. Reference designations agree with schematic and wiring diagrams. _____
9. Material List is complete and agrees with the applicable drawings. _____
10. The applicable test and/or special inspection requirements referenced on the assembly drawings are clear in meaning and complete. _____
11. The applicable specifications and standards referenced on the assembly drawings are clear in meaning and complete. _____
12. Printed wiring master patterns are included when required. _____
13. Detailed manufacturing sequences of assembly. _____

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ENGINEERING REVIEW - DETAIL DRAWINGS

1. The drawing depicts the actual part used in the equipment. _____
2. The dimensions and tolerances are in accord with the requirements of the part and manufacture. _____
3. The applicable electrical and electronic criteria, special test and/or special inspection requirements are specified or referenced on the drawing and are technically correct. _____
4. The applicable material, essential process, specification and other required technical information is given or referenced on the drawing and is technically correct. This includes such items as the following: _____
 - a. Material Specifications
 - b. Finish Specifications
 - c. Plating Specifications
 - d. Heat Treatment
 - e. Welding Specifications
 - f. Surface Roughness Symbols
5. The applicable test and/or special inspection requirements referenced on the assembly drawings are clear in meaning and complete. _____
6. The applicable specifications and standards referenced on the assembly drawings are clear in meaning and complete. _____
7. Printed wiring master patterns are included when required. _____
8. Detailed manufacturing sequences of assembly. _____

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DRAWING REVIEW - DETAIL DRAWINGS

1. Drawing is required and does not represent a Government standard part, i.e., AN, MS, etc. _____
2. Commercial or vendor items not covered by a Government standard are represented by a "specification" or "Source control drawing." _____
3. Necessary views are shown and properly located on the drawing form. _____
4. Drawing represents an "End Product" picturization only. (Exception only when reference to mandatory special methods or processes is necessary to insure part meeting functional requirements). _____
5. Dimensioning is complete, dimensions are shown only once, and on the proper views. _____
6. Each dimension has a tolerance applied directly or indicated by a general note or a reference document. _____
7. Part dimensions match with related detailed and applied tolerances and meet interchangeability requirements. _____
8. Dimensions, tolerances, and geometric symbols are in accordance with MIL-STD-_____. _____
9. Radii, chamfers, countersinks, reliefs, and counterbore information are indicated and in accordance with MIL-STD-_____. _____
10. Part marking is specified on the drawing and location given when required. _____
11. The applicable test and/or special inspection requirements specified or referenced on the drawing are clear in meaning and complete. _____

DRAWINGS REVIEW - DETAIL DRAWINGS (cont'd)

12. The applicable material, finish specification, and other technical information given or referenced on the drawing is clear in meaning and complete as to type, class and grade. This includes such items as the following:

- a. Material Specifications
- b. Finish Specifications
- c. Plating Specifications
- d. Heat Treatment
- e. Welding Specifications
- f. Surface Roughness Symbols
- g. Screwthread Requirements
- h. Spring Requirements
- i. Unique Requirements
- j. Other applicable Specifications

13. Instances in which general notes do not apply are so noted on the drawing.

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DRAWING REVIEW - WIRING DIAGRAMS

1. Wiring diagram is per MIL-STD-_____. _____
2. Wiring diagram is properly arranged and is oriented to
show the physical arrangement of components in relation
to each other and the interconnections between components. _____
3. Wire color, originating point and terminating point are
shown. _____
4. Reference designations are per MIL-STD-_____. _____
5. Abbreviations are per MIL-STD-_____. _____
6. Notes are clear, current and properly located. _____
7. The wiring diagram and schematic diagram agree. _____
8. The applicable assembly drawing is referenced. _____

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DRAWING REVIEW - SCHEMATIC DIAGRAMS

1. Schematic is per MIL-STD-_____. _____
2. Schematic for printed wiring board conforms to assembly drawings. _____
3. Symbols are per MIL-STD-_____. _____
4. Abbreviations are per MIL-STD-_____. _____
5. Reference designations are per MIL-STD-_____. _____
6. Component values, tolerances and ratings are shown. _____
7. Necessary notes are clear and correct. _____
8. The schematic and wiring diagrams agree. _____
9. The applicable assembly drawing is reference. _____

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DRAWING REVIEW - INDEX LISTS

1. Index list number shown is the same as the number assigned to the top equipment assembly. _____
2. Equipment title column nomenclature agrees with the title nomenclature on top equipment assembly drawing. _____
3. Code identification number shown. _____
4. Contractor approval blocks signed. _____
5. All applicable Parts Lists and Data Lists are shown and in the proper order starting with the highest order of assembly and continuing to the lowest order of assembly level. _____
6. The numbers listed in the identification number column agree with the applicable Parts List and Data List numbers, and assembly levels are indicated. _____
7. The nomenclature column agrees with the nomenclature on the applicable Parts List and Data List. _____

DRAWING REVIEW - DATA LISTS

1. Data List number shown and is the same as the drawing number assigned to the top equipment assembly. _____
2. Equipment title nomenclature shown and it agrees with nomenclature on top equipment assembly. _____
3. Code identification number shown. _____
4. Contractor approval blocks assigned. _____
5. Identification numbers are listed in numerical sequence. _____
6. The applicable standards and specifications are listed and in the order of precedence specified in MIL-STD _____. _____
7. The identification number column shows the drawing prefixed by the drawing size symbol, i.e., B ONOXXXXX. _____
8. Nomenclature agrees with nomenclature on the drawing. _____
9. Classified drawings, lists, and other documents are noted in classification column of item line. _____

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DRAWING REVIEW - PARTS LISTS

1. Parts List number shown and correct. _____
2. Equipment title nomenclature shown and agrees with title
on top assembly drawing. _____
3. Code identification number is shown. _____
4. Contractor approval blocks signed. _____
5. First item on Parts List is highest order of assembly and
continuing to the lowest order of assembly. _____
6. Bulk material designated on Parts List. _____
7. Applicable specifications and standards are shown and in
the order of precedence specified in MIL-STD-_____. _____
8. Identification number(s) agree with numbers on the
applicable drawing(s). _____
9. Quantity required per assembly level and the assembly
levels are listed corrected. _____
10. Quantity per equipment correct. _____
11. Nomenclature agrees with the drawing. _____
12. Remarks column completed when applicable. _____

COMPTROLLER MANUAL
VOLUME X (QUALITY ASSURANCE)
PART IV
PRODUCT QUALITY DEFICIENCY REPORTING SYSTEM

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(IV-1) Preparing instructions and sample SF 368, Quality Deficiency Report .	

FORWARD

Subj: Comptroller Manual, Volume X, Part IV, Product Quality
Deficiency Reporting System

1. PURPOSE. Part IV establishes a Product Quality Deficiency Reporting System.
2. APPLICABILITY. Part IV of this manual applies to acquisitions where the Coast Guard is the designated source of supply (refer to COMDTINST M4400.13 for reporting deficiencies of material acquired from other sources). Product quality deficiency reports are required for deficiencies discovered within the first year of newly acquired products. Part IV does not apply to aeronautical equipment (refer to COMDTINST M13020.1 for reporting deficiencies of aeronautical equipment).
3. DIRECTIVES AFFECTED. Part IV cancels COMDTINST 5210.9.
4. FORMS. Supplies of Standard Form 368, Quality Deficiency Report, may be requisitioned from the E/GICP (Routing Identifier Code ZNC) using stock number 7540-00-133-5541.
5. ACTION. Commanding officers of field units, district commanders, commanding officers of Headquarters units, and Commander, Activities Europe shall ensure compliance with the provisions of Part IV.

- A. Introduction. A product may fail to perform as intended or required for two major reasons. Either the product fails to meet the prescribed specification, or the specification itself is deficient. Top management needs a timely product deficiency feedback system to assure that the specific cause of the deficiency is determined and the necessary corrective action is taken throughout the procurement process. The focus is on Headquarters unit initiated procurements because of the repetitive nature and scale of the procurements involved and the availability of quality assurance resources at these levels.
- B. General. Although other material reporting systems require specific reports in certain areas, the Product Quality Deficiency Reporting System is a necessary supplement. The relationship with EICAM, for example, is similar to that between the unsatisfactory report of aeronautical equipment (Form CG-4010 SM) and EICAM discussed in Chapter 4 of the Aeronautical Engineering Maintenance Manual, COMDTINST M13020.1. The Quality Deficiency Report is product initial-acquisition-related and operationally oriented. Deficiencies reported should be identified from a fitness for use as seen by the user viewpoint. Not only are material deficiencies including substandard workmanship to be reported, but conditions such as inadequate design, improper or poor installation design or practice. Deficiencies involving safety, human factor or display inadequacies shall also be reported. Information required does not have to be technical in nature, but technical input is invited if available. Existing material failure reporting systems will continue to provide the necessary long term technical and statistical input from a maintenance standpoint in the particular areas involved.
- C. Definitions.
1. Products are all items, materiels, materials, data, software, supplies, systems, assemblies, subassemblies, or portions thereof which are produced, purchased, developed or otherwise used by the Coast Guard.
 2. Quality Deficiency is any deficiency which prevents an item from fulfilling its intended purpose.
- D. Objectives. The objectives of the Product Quality Deficiency Reporting System are to:
1. Obtain timely information concerning perceived product deficiencies from commanding officers.
 2. Distribute that information to the cognizant Headquarters or Headquarters unit elements for appropriate action.

D-3. Allow rapid surfacing of deficiencies to managerial levels.

4. Draw early attention to critical problem areas.

5. Provide necessary input to effectively monitor and evaluate procurement quality assurance.

E. Responsibilities.

1. The Comptroller shall be responsible for maintaining and distributing the data generated by this system and initiating follow-up to insure timely action.

2. Program managers shall review data concerning units under their cognizance and take such actions as they deem appropriate.

3. Support managers shall review data concerning procurements under their cognizance, interface with existing material reporting systems, and take appropriate action.

4. Contracting officers shall review data concerning contracts under their cognizance and take appropriate action.

5. District commanders shall review reports submitted by units under their cognizance and comment as they deem appropriate.

F. Reports.

1. Commanding officers of field units, district commanders, commanding officers of Headquarters units, and Commander, Activities Europe shall submit Product Quality Deficiency Reports (PQDR) to Commandant (G-FQA) via their chain of command for quality deficiencies discovered within one year of their acquisition of the product. Standard Form 368 will be used for this purpose. If the deficiencies being reported come under the requirements of other specific reporting systems, reference those reports in the PQDR. A sample form and preparing instructions are contained in enclosure (1).

2. Commandant (G-FQA) shall receive, review, maintain a data base form, and forward the PQDRs to the cognizant Headquarters/ Headquarters unit elements with target response time. Commandant (G-FQA) will establish follow-up procedures to insure timely action. After the appropriate action has been taken, the PQDRs will be returned to the originator via Commandant (G-FQA) and the chain of command with the action taken annotated. Commandant (G-FCP) will receive a copy of all SF-368s.

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Product Quality Deficiency Report (PQDR)
Preparing Instructions

- A. Introduction: These instructions apply only for the purpose contained herein. The use of SF-368 as required by other directives remains unchanged. The submission of this report does not supersede or preclude other reporting requirements.
- B. General. (Category II) as printed under the title refers to the relative effects the deficiency has on mission accomplishment. It has no significance for the purposes of this system. Typewritten reports are preferred, but ball point pen is acceptable. Complete the following items in Section I where the information is applicable and available. Include enough information so as to provide a clear understanding of the deficiency. Use additional separate sheets if necessary.

Block 1a	Enter name and address of reporting activity.
Block 1b	Enter date, name, phone no. and signature of individual submitting the report.
Block 2a	Enter Commandant (G-FQA/TP51)
Block 2b	Leave blank
Block 3	No entry required.
Block 4	Self-explanatory.
Block 5	Enter the stock no. of the deficient item when available.
Block 6	Enter noun name of the item. If this is a component part, enter end item information in block 16.
Block 7	Enter name of the manufacturer or activity that produced the product.
Block 8	Enter part no. when applicable.
Block 9	Enter serial no.
Block 10	Enter the procurement contract no. if known.
Block 11	Self-explanatory.
Block 12	Enter date indicated if known.
Block 13	No entry required.
Block 14	No entry required.
Block 15	No entry required unless significant.
Block 16	Enter end item data when applicable. Ref. block 6.
Block 17	Enter dollar value if known.
Block 18	Enter the est. cost for correcting the deficiency if it can readily be determined.
Block 19	Self-explanatory.
Block 20	Leave blank.
Block 21	No entry required.

Encl. (IV-1) to COMDTINST M4855.1

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Block 22 For a comprehensive report, the following types of information should be entered:

- a. An explanation of what is wrong. Be specific.
- b. Under what conditions the deficiency was discovered and how; i.e., visual inspection, maintenance, functional use, failure.
- c. Reference any other reports submitted concerning this deficiency. Include requests for corrective action and any action taken.
- d. Include specific violations of specifications, pertinent regulations, instructions.
- e. Does this deficiency constitute or contribute to a safety hazard?
- f. Impact of the deficiency. Include additional manhours involved, operational delays, additional costs, extraordinary measures, special considerations, etc.
- g. Packaging, storage or handling information when it appears these factors have contributed to the deficiency.
- h. List any photographs or sketches if attached.
- i. Recommendations for corrective measures.
- j. Any other information you feel is important.

Encl. (IV-1) to COMDTINST M4855.1

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QUALITY DEFICIENCY REPORT
(Category II)

SECTION I

1a. From (Originating point)				2a. To (Screening point)			
1b. Typed Name, Duty Phone and Signature				2b. Typed Name, Duty Phone and Signature			
3. Report Control No.		4. Date Deficiency Discarded	5. National Stock No. (NSN)		6. Nomenclature		
7. Manufacturer/Mfg. Code/Shipper			8. Mfg. Part No.	9. Serial/Lot/Batch No.		10. Contract/PO/Document No.	
11. Item <input type="checkbox"/> New <input type="checkbox"/> Repaired/Overhauled		12. Date Manufactured/Repaired/Overhauled		13. Operating Time at Failure		14. Government Furnished Material <input type="checkbox"/> Yes <input type="checkbox"/> No	
15. Quantity		a. Received	b. Inspected		c. Deficient	d. In Stock	
16. Deficient Item Works On/with		(1) Type/Model Series					
a. End Item (Aircraft, tank, ship, howitzer, etc.)		(2) Serial No.					
b. Next Higher Assembly		(1) National Stock No. (NSN)		(2) Nomenclature		(3) Part No.	
						(4) Serial No./Lot No.	
17. Dollar Value		18. Est. Correction Cost		19. Item Under Warranty <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		20. Work Unit Code/ETC (Navy and Air Force only)	
21. Action Disposition <input type="checkbox"/> Holding Exhibit for _____ days <input type="checkbox"/> Released for Investigation <input type="checkbox"/> Returned to Stock/Disposed of <input type="checkbox"/> Replaced <input type="checkbox"/> Other (Explain in Item 22)							
22. Details (Describe, to best ability, what is wrong, how and why, circumstances prior to difficulty, description of difficulty, cause, action taken including disposition, recommendations. Identify with related item number. Include and list supporting documents. Continue on separate sheet if necessary.)							

SECTION II

23a. To (Action Point)		24a. To (Support Point) (Use Items 25 and 26 if more than one)	
23b. Typed Name, Duty Phone and Signature		24b. Typed Name, Duty Phone and Signature	
25a. To (Support Point)		26a. To (Support Point)	
25b. Typed Name, Duty Phone and Signature		26b. Typed Name, Duty Phone and Signature	

368-101

STANDARD FORM 368, April 1974
General Services Administration (FPMR 101-26-7)

Encl. (IV-1) to COMDTINST M4855.1

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Carbon paper is required — only face of form is chemical treated

SECTION III

27a. From (Action point)

28a. To (Screening point)

27b. Typed Name, Duty Phone and Signature

28b. Typed Name, Duty Phone and Signature

29. Specification No.

30. Originator's Method of Notification

☐ SF 368

☐ Mag (Copy attached)

☐ Phone Call/Visit

31. Type of Shipment/Purchase

Direct Delivery From Vendor:

☐ Depot

☐ Stock
Item

☐ Manufacture
Item

☐ Federal Supply
Schedule

Other (Specify)

32. Findings and Recommendations of Investigation (Explain in detail. Continue on a separate sheet of paper, if necessary.)

33. Action Taken

34. Results of Depot Surveillance

35. From (Screening point)

36. To (Originator)

37. Distribution

STANDARD FORM 368 BACK
April 1974